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ENTEROSTOMY AND ENTEROCOLOSTOMY

IN THE TREATMENT OF ACUTE INTESTINAL OBSTRUCTION FOLLOWING PELVIC OPERATIONS *

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Intestinal obstruction following abdominal section is such a distressing complication, the diagnosis is at times beset with so much difficulty, the prognosis is so doubtful, and the mortality so high, that I make no apology in bringing the matter to your attention.

The measures taken to prevent intestinal obstruction, such as the peritonealization of raw surfaces to which intestine may adhere, and the closure of all adventitious openings into which intestinal coils may slip, are commonly known and generally adopted. From personal observation and experience, in addition to the foregoing measures, I should like to emphasize the great importance of aseptic technic and the avoidance of intestinal trauma during the operation, and of judicious care in the handling of drainage and the administration of cathartics after the operation.

It is quite likely that an infection causing a localized peritonitis often plays a very important part in the origin of postoperative intestinal obstruction, and that whereas infection and infiltration of the intestinal coats always takes place secondarily after an intestinal loop is obstructed, it may be primary—the cause and not the effect.

An injury to the serous surface of the intestine that denudes or breaks the endothelial covering, or a localized bruising of the serous or muscular coat, or an interference with the blood supply of an intestinal loop may be the exciting cause of adhesions between the bowel and a neighboring part. The intestine under these conditions is peculiarly susceptible to infection, and if such occurs its wall may rapidly become infiltrated with inflammatory products. A combination of localized trauma with imperfect aseptic technic is not infrequent in the etiology of postoperative intestinal obstruction.

Pelvic drains become a source of danger when unwisely selected, placed or handled. A drain after six or eight hours becomes a protective pack. The surrounding parts adhere to it with more or less tenacity, depending on its structure, and exclude the infected area. If the drain is removed before the adhesions are secure, infection is released, and if the drain is taken out at a time when the adhesions between it and the surrounding parts are firm, traumatism is inevitable, and so we have again the combination of sepsis and trauma.

The unwise administration of cathartics following operation may precipitate an attack of intestinal obstruction. A coil of intestine lightly adherent, slightly kinked, and suffering with a moderate degree of localized infection, frequently recovers itself and the symptoms are gradually relieved if let alone; but if, instead of rest and quiet for the intestine, active catharsis is practiced, the affected loop is subjected to peristaltic movement and the repeated onrush of the intestinal contents; thus the bowel is traumatized. It becomes distended, the mechanical difficulties are increased, and obstruction may be precipitated.

These are the factors in the production of postoperative obstruction that I think it most important to avoid. The measures of prevention therewith recommended are the most careful aseptic technic, the avoidance of intestinal trauma, the very circumspect selection and handling of drains, and the avoidance of cathartics after operation until peristalsis, temperature and pulse are normal.

STAGES OF INTESTINAL OBSTRUCTION

It is quite likely that if every case of intestinal obstruction were immediately recognized and at once exposed to operation, a very large proportion of patients would recover. But the diagnosis during the early postoperative convalescence is by no means easy, for in the incipient stage obstruction may be simulated by other comparatively harmless conditions, such as tympanites, acetonuria, exaggerated ether nausea, etc., and for this reason postoperative obstruction is frequently complicated with a spreading peritonitis and toxemia by the time the condition is unmistakable, and an operation is undertaken for its relief.

McGlannan[1] has classified intestinal obstruction into the stage of onset, the stage of compensation, and the stage of toxemia. These represent no definite period of time as all three may occur within twenty-four hours, or several days may elapse. In the first stage there is intermittent and crampy or continuous pain, continuous nausea and vomiting, with or without constipation or diarrhea. These symptoms are independent of the ingestion of food and are not relieved by an enema. McGlannan says:

> Lavage of the stomach may empty that organ of food, gastric secretion or duodenal contents, but without permanently relieving pain. If, therefore, a patient is suddenly seized with abdominal pain and an effectual enema combined

* Chairman's address, read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Sixty-Ninth Annual Session of the American Medical Association, Chicago, June, 1918.

1. McGlannan, Alexius: Intestinal Obstruction, THE JOURNAL A. M. A., Aug. 21, 1915, p. 673.

with gastric lavage does not bring relief from the pain, a diagnosis of acute intestinal obstruction should be made and operation promptly performed.

If there is any hesitation about operating on such slight symptoms, a second lavage should be done after an hour. The presence of duodenal material in the washings at this time makes the diagnosis certain and operation imperative. . . .

In the second stage we have persistent pain, distention, a visible and palpable spastic coil of intestine, visible peristalsis . . . local tenderness, etc. In this stage we frequently have gangrene of the bowel and a localized peritonitis at the seat of obstruction. In the third stage the toxemia overshadows the other complications which may be present and becomes the most urgent indication for treatment.

It is probably true that if patients exhibiting the symptoms mentioned by McGlannan as constituting his first stage were uniformly operated on, all cases of obstruction, or nearly all, would be saved; it is also probably true that many operations would be performed unnecessarily, and there would be some mortality from the second operative interference. Be that as it may, the fact remains that a majority of cases of postoperative obstruction are twenty-four or more hours old before operation is undertaken, and during that time irreparable damage may be done to the intestine, and the patient may be in the last stages of toxemia.[2]

When we fortunately encounter an early case, all that is needed is the relief of the obstruction by the separation of adhesions, division of bands, etc., and the outcome is usually successful. In later cases there is always some constriction and infiltration of the intestine at the obstructed point, with distention and inflammatory changes in the intestinal walls for a variable distance above. In volvulus and strangulation, the morbid anatomy, whatever it may be, is definitely localized to a single loop, and resection of that part with anastomosis of the bowel above and below will restore the intestinal canal. In many instances, however, while the intestinal coats have not been devitalized, the inflammatory changes are not confined to a single loop and the amount of distended and infiltrated bowel is too great for resection in the toxic patient. Here the complication is peritonitis or toxemia.

Fig. 1 (Case 1).—Murphy button anastomosis of proximal end of divided ileum (high up) with cecum. The distal end of the ileum was closed and dropped.

SOURCE OF TOXEMIA

The actual source of the toxemia in intestinal obstruction has been ascribed to various factors, notably the decomposition of food and the growth of bacteria in the intestinal contents; also to the dehydration of the tissues of the body brought about by the frequent rejection of the gastric contents and the accumulation of fluid in the obstructed intestine. In recent years, surgical physiologists and pathologists[3] having observed that high obstruction of the small bowel is so much more rapidly fatal than low obstruction, death has been ascribed to a toxin resulting from the aberrant activity of the duodenal epithelium and probably also of the pancreatic cells. Draper,[4] the champion of this theory, believes that there is a point in the small intestine, which he estimates at about the termination of the jejunum, above which the toxin is certainly of duodenal or pancreatic origin, and below which bacterial invasion may be the prominent feature.

We are inclined to believe that the conclusions of Hartwell and Hoguet,[5] enunciated in 1912, are true in regard to the obstruction seen after pelvic operations. They declare that in dogs, at least, intestinal obstruction causes death by the presence in the blood of toxic substances that produce fatal lesions in the kidney, liver and other tissues. The essential factor that admits this substance into the blood is an injury to the lining cells of the intestine, caused by the irritating action of the stagnated contents, together possibly with the mechanical damage due to stretching. The poisons themselves may arise from the secretory activity of the various digestive glands or from bacterial activity. They may be the same as those found in the normal tract, or they may be substances newly formed under the conditions of stagnation. Whatever their source, they are innocuous as long as the mucosa remains normal.

OPERATIVE MEASURES

We have, then, in most cases at the time of operation, this problem of the toxemia to meet in addition to the relief of the obstruction and the treatment of the affected intestine. Whatever the source of the toxemia, no one can deny that the vital element in its treatment is the drainage of the intestinal contents above the obstructed point. Evacuation of the intestinal contents has been an essential part of the operative procedure, and it will be followed with successful results when the peristaltic action of the intestine is sufficiently unimpaired to drive the residue onward past the point of relieved obstruction and cause free evacuation of the bowels. But how often after the point of obstruction is removed and the distended bowel immediately above it is emptied, peristalsis is impaired, and before the intestine recovers itself sufficiently, there is a reaccumulation of the poisonous contents which is not driven through the affected area and the patient dies of toxemia.

It is here that continuous drainage by means of enterostomy above the obstructed point saves the day. Nevertheless, the manifest disadvantages of enterostomy, even though the patient's life be spared, have caused it to be used only in the most desperate cases when the immediate result alone dare be considered, for in a majority of instances a subsequent closure of the enterostomy wound and a restoration of the fecal current must be undertaken.

2. In McGlannan's series the average duration at the time of operation was two and one-eighth days in the successful cases, and three and one-third days in those that were fatal.

3. Whipple, G. H.; Stone, H. B., and Bernheim, B. M.: Intestinal Obstruction: A Study of a Toxic Substance Produced in Closed Duodenal Loops, Jour. Exper. Med., 1913, **17**, 286 and 307. Sweet, J. E.; Peet, Max N. and Hendrix, B. M.: High Intestinal Stasis, Ann. Surg., 1916, **63**, 720. Hartwell, J. A.: Intestinal Obstruction, Jour. Exper. Med., 1913, **18**, 139. Mayo, W. J., Resection for the Relief of Intestinal Obstruction, THE JOURNAL A. M. A., Sept. 14, 1907, p. 903. Maury, J. W. Draper: Death in Acute Intestinal Obstruction and Kindred Conditions is Due to Physiologic Disturbance, THE JOURNAL A. M. A., Jan. 1, 1910, p. 5.

4. Draper, J. W.: Intestinal Obstruction, THE JOURNAL A. M. A., Oct. 7, 1916, p. 1080.

5. Hartwell, J. A., and Hoguet, J. P.: An Experimental Study of High Intestinal Obstruction, Am. Jour. Med. Sc., 1912, **143**, 357.

One might hope, therefore, for a way of effectually draining the obstructed intestine without the disadvantages of a fecal fistula and the necessity of another operation.

The following situation confronts us: We have an intestine distended with poisonous septic products above the obstructed point, an intestinal tube in the obstructed area whose walls are infiltrated with inflammatory products and surrounded with localized peritonitis—a segment of intestine in which normal peristalsis cannot be confidently expected. This atony of the intestinal coats, this addition of a localized peritonitis to the mechanical obstruction, is a factor in all but the earliest cases.

Fig. 2 (Case 2).—Suture anastomosis between ileum and cecum without section of ileum.

The part played by the intestinal muscle is seen in chronic pelvic inflammatory disease, in which the small intestine often is so bound down and angulated by adhesions that we wonder how the bowel can act at all, and yet in some such cases even constipation has not been a symptom. Is it not the explanation that here the muscular power of the intestinal walls is unimpaired, and the successive waves of peristalsis are able to drive the intestinal contents onward? On the contrary, when there is peritonitis and infiltration of the intestinal wall with inflammatory products, peristalsis is so weak that an apparently slight mechanical impediment may be sufficient to prevent the passage of the intestinal contents.

A case of acute obstruction, which I shall describe later, in which the patient was saved by enterostomy and subsequent intestinal exclusion, led me to ask why we should not exclude the damaged section of the intestinal tract in acute pelvic obstruction and reestablish the intestinal canal by anastomosing the part above with the part below the obstruction. It has been shown by the work of Lane and others that large portions of the intestinal tract may be permanently excluded without detriment to the patient. Since that time, in four patients, I have excluded the obstructed loop and three of them recovered. They were all in desperate condition at the time of the operation, and all of them without much question would have died without it.

Exclusion of the damaged loop and drainage of the bowel above the obstruction may be accomplished by entero-enterostomy. Intestinal relationships thereby made need not be permanent, for when the acute symptoms have subsided, it is quite possible that the bowel may entirely recover itself, the normal course of the intestinal contents may be reestablished, and the anastomotic opening gradually cease to functionate. Although I have not had a chance to verify this occurrence in my cases, the normal action of the intestine at a later date seems to warrant this assumption.

In order to make the drainage of the distended loop as effectual as possible, and so that the intestine into which the contents of the upper bowel are delivered might be emptied with facility, the anastomosis was made between the small intestine above the point of obstruction and the large intestine below it. Either the cecum or the sigmoid flexure was selected, depending on its proximity to the affected loop. But when the case was very urgent, the toxemia marked and the peritonitis well developed, anastomosis with the lowest available part of the colon (iliosigmoidostomy) was selected as the procedure of choice; a rectal tube was inserted into the bowel up to the anastomotic opening, and, in one case at least, the intestinal contents expelled into the rectum from the ileum were being discharged before the patient had left the operating table.

When iliosigmoidostomy was done, it was felt there was less need for enterostomy and manipulative drainage of the bowel because the intestinal contents discharged into the sigmoid can be at once evacuated by a rubber tube. In the successful case in my series it was omitted. When the anastomosis is with the cecum, enterostomy is desirable in order to prevent absorption of the intestinal contents from the cecum, and in the two successful cases of anastomosis between the ileum and the cecum, this was done as a preliminary measure. Enterostomy, which is an absolute necessity as a preliminary step in all operations for obstruction in order to get rid of the toxic contents, requires some time and may be associated, in spite of care, with soiling of the operative field; furthermore, it is not always as easily accomplished, nor can it be as effectually done as it is painted, and must be accompanied by a certain amount of traumatism to the intestinal coats. In the worst cases, therefore, anastomosis of the small bowel with the sigmoid, which makes this preliminary evacuation unnecessary, saves time and prevents traumatism.

Fig. 3 (Case 3).—Division of ileum; closure of both ends; lateral suture anastomosis between ileum and cecum. Lower end of ileum dropped.

The subsequent history of the patients in whom I have performed enterocolostomy seems to show that the exclusion of a part of their intestinal canal has done them no harm. They are in good health and have had no further trouble. As a result of this experience, I believe that enterocolostomy has a distinct place in the therapy of acute intestinal obstruction following pelvic operations, and especially when the condition is advanced and complicated with pelvic peritonitis and toxemia.

REPORT OF CASES

Case 1.—L. M., aged 28, was operated on, Jan. 11, 1911, for extra-uterine pregnancy. A right salpingo-oophorectomy, left salpingectomy and appendicectomy were performed, with posterior vaginal drainage. Convalescence was complicated by a suppurating incision. Symptoms of obstruction developed about February 5, after the ingestion of raw fruit. The diagnosis was unquestionable; February 8 operation revealed free peritoneal fluid, pelvic peritonitis and extensive adhesions between the coils of the small bowel in the pelvis and between the small intestine and under surface of the abdominal incision. The patient's condition was desperate. A high enterostomy was made. The patient rapidly improved. There remained, however, an intestinal fistula which was high up, apparently in the very first part of the ileum. The substances taken by mouth would be discharged from the fistula within fifteen minutes. The skin of the abdominal wall was constantly irritated, and the emaciation of the patient became extreme. March 22, the lower end of the proximal segment was anastomosed to the cecum with a Murphy button. The upper end of the distal segment was closed and dropped. The patient passed the button on the tenth day and made a good recovery. At present, the patient is in excellent health and doing her own work.

Case 2.—J. T., aged 28, was operated on, April 4, 1912, for myomata uteri and retroflexioversion. Myomectomy was performed; five incisions were made; a Baldy suspension was done. The recovery was uneventful. August 17, there were symptoms of obstruction. These persisted until August 20, when they became unmistakable and operation was performed, which revealed extensive adhesions between the small bowel and the pelvic viscera, pelvic peritonitis and toxemia. Enterostomy of the ileum above the involved area was performed with evacuation of the intestinal contents, division of the constricting band, and anastomosis between the ileum and cecum. The recovery was uneventful and the patient is now in excellent health.

Case 3.—C. L., aged 35, was operated on, April 12, 1913, for chronic appendicitis, retroflexioversion of the uterus and cystic ovary. Appendicectomy, left salpingo-oophorectomy and ventrosuspension were performed. The early days of convalescence were somewhat stormy. The patient complained constantly of pain. Symptoms of obstruction were unmistakable, and operation was performed, April 22, 1913. Adhesions were found between the ileum and the left broad ligament. Enterostomy of the ileum above the obstructed area was performed with evacuation of fluid, division of the bowel at the site of the enterostomy, closure and invagination of both ends and anastomosis of the ileum above this point with the cecum. The patient was slightly improved, but symptoms recurred about April 25. Operation revealed peritonitis involving the lower ileum and the area of anastomosis. Enterostomy of the small intestine above this point was done and was followed by prompt recovery with spontaneous closure of the fistula. At present, the patient is in fair health, though she suffers occasional attacks of flatulence and pain.

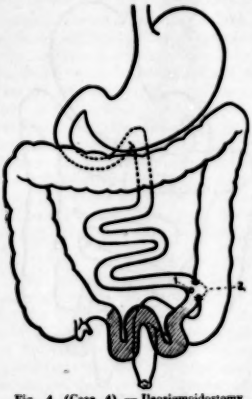

Fig. 4 (Case 4). — Ileosigmoidostomy (suture) for low obstruction and torsion of ileum due to an adventitious bend.

Case 4.—A. F., aged 36, was operated on, June 13, 1905, for bilateral salpingitis, appendicitis and retroflexioversion of the uterus. Right salpingo-oophorectomy, left salpingectomy and appendicectomy were performed with release of intestinal adhesions, and ventrosuspension. Symptoms of obstruction began, Aug. 15, 1915. These persisted until August 22, when a diagnosis of obstruction was made and an operation was performed. A coil of lower ileum had slipped beneath an adventitious band, and had then undergone torsion. There was peritonitis and marked toxemia. Enterostomy of the ileum above the obstructed point was performed, and then ileosigmoidostomy. There was no discharge of gas or feces from the bowel, and the patient died within two days.

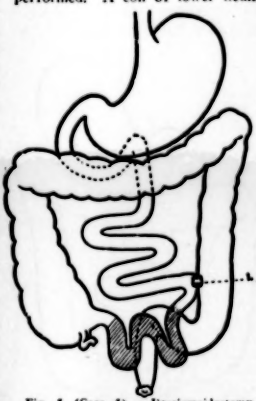

Fig. 5 (Case 5). — Ileosigmoidostomy with Murphy button for extensive adhesions forming after a uterus suspension operation. The small bowel was firmly adherent in the pelvis.

Case 5.—H. P. was operated on, June 7, 1916, for chronic appendicitis and retroflexioversion of the uterus with adherent adnexa. Appendicectomy was performed with release of adhesions and Baldy suspension of the uterus. Symptoms of obstruction began about June 21. They became unmistakable by June 24, and an operation was performed, which revealed coils of the small bowel adherent in the pelvis, pelvic peritonitis and toxemia. Anastomosis between the ileum high above and the obstructed area and the sigmoid was done with a Murphy button. The recovery was uneventful.

INTRASPINAL TREATMENT OF CEREBROSPINAL SYPHILIS

LATER RESULTS, BASED ON FIVE YEARS' OBSERVATION *

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It is five years since we first acted on the suggestions of Swift and Ellis[1] in regard to the intraspinal treatment of cerebrospinal syphilis. Since then we have attempted to weigh the value of their suggestions. We realized that a judgment could not be passed before some years of patient effort and observation. While we have published detailed reports of our work previously, we have been stimulated to present additional data by an article of Dr. Bernard Sachs[2] entitled "Truth About Intraspinal Injections in Treatment of Syphilis of Nervous System." It would be most unfortunate if many of the statements made by him were accepted generally. Dr. Sachs has presented his personal opinion of a mode of treatment, but he has failed to state adequately the data from

* Read before the Section on Practice of Medicine at the Sixty-Ninth Annual Session of the American Medical Association, Chicago, June, 1918.

1. Swift, H. F., and Ellis, A. W. M.: New York Med. Jour., 1912, 96, 53.

2. Sachs, Bernard: Truth About Intraspinal Injections in Treatment of Syphilis of Nervous System, The Journal A. M. A., Aug. 25, 1917, p. 681.

which he drew his conclusions. It is distasteful for us to enter a controversy, but in the interest of the real truth we cannot let certain of his assertions pass unchallenged. We shall consider the objections raised by this writer one by one.

He quotes with approbation a statement of Halliburton that "the use of salvarsan (arsphenamin) in locomotor ataxia and similar affections via the cerebrospinal fluid has been abandoned as it is fatal not only to the syphilitic organism but also to the patient." This is flatly contradicted by our personal experience. In five years we have administered a total somewhat in excess of 220 intraspinal injections to thirty-four patients. Absolutely no ill effect has been noted, nor indeed have we seen even a remote one which could be charged justly to the method. Three paretics and one tabetic eventually died of the disease and one tabetic died as the result of an intercurrent affection. Even bladder irritation was noticed in only one case, and here it was of the most transitory nature. A reaction in the way of temporary and occasionally severe exacerbation of the dorsal root pains is the rule.

It should be understood that our experience has been limited to the use of the technic devised by Swift and Ellis[3] in which auto-arsphenamized serum is employed and to the modification of Ogilvie,[4] in which the human serum is arsphenamized in vitro with a known amount of the drug, the maximum amount being 0.5 mg. We have had no experience with the other methods in which more or less diluted arsphenamin or neo-arsphenamin is added directly to the spinal fluid, notable among which is the method of Ravaut. Careful study of the literature will show that most of the disastrous results have followed the use of the latter procedure, and we feel, therefore, that it is not a method to be recommended. Accuracy demands that some distinction be made between these methods before condemning them all because of a fault that is quite evidently inherent to one of them.

Another objection is that "claims were made for the intraspinal method chiefly by men whose interest was centered on a change in the Wassermann reaction, in a reduction of the cell count of the cerebrospinal fluid and in a change in the globulin reaction rather than in the clinical condition of the patient. After all, the patient remains the chief consideration." Here the writer has questioned the deductions drawn by previous investigators from very careful work on the ground that their attention was fixed on the laboratory changes rather than on the clinical features. We fear that the critic has shown here his failure to study in detail the available case reports[5] in which the clinical side is given the great emphasis to which it is entitled. There can be no doubt that to these workers the patient was the single consideration. The laboratory findings were published as part of the evidence, for they are objective and lend themselves well to record. Though of great importance, no one would ever attempt to interpret their significance taken alone. We do not hesitate to assert dogmatically that clinical improvement generally goes hand in hand with favorable changes in the various reactions. This statement is based on a consideration of some 250 laboratory examinations made in the cases which are here reported and on many additional laboratory examinations made on patients treated by other methods or for purely diagnostic purposes. No one conversant with the results would claim that the correspondence between clinical and laboratory findings is invariable. It is hardly necessary to direct attention to many other instances in medicine in which similar occasional deviation from the usual is seen. To argue from rare exceptions is scarcely logical. If one would disregard the use of the laboratory reactions in following the progress of treated cases, consistency would compel him to abandon the use of the same tests in the diagnosis of obscure neurologic conditions, and we feel that no one would like being robbed of the recent fruit of the investigator's toil.

The next argument to consider is that "it takes the experience of a trained neurologist and psychiatrist to estimate at their true value changes in the clinical symptoms." As Fordyce cogently remarks, "It does not require the experience of a trained neurologist to convince these patients that their condition has been changed from hopeless invalidism to comparative good health." Any observer is competent to detect the change from the ataxic to the nonataxic or from total or relative incapacity to the power to earn a living. The patient himself is fully able to tell whether or not he is racked by excruciating pains or tortured by gastric crises. The unprejudiced can readily satisfy themselves from a perusal of many published case reports that the signs of improvement when noted are of the obvious and unquestionable kind.

Sympathy was expressed with Halliburton's view that "particularly regrettable is the divorce between those who pursue their investigations by the bedside and those who work in the laboratory." It would appear to us that the writer has erred in expression, for he has really taken exception to the conclusions reached by those who actually have pursued their investigations both at the laboratory and at the bedside. Swift[6] replied that as he himself was naturally interested in the welfare of his patients, both the bedside and the laboratory features of each case were accurately recorded, for neglect of either one is not in accord with the modern tendency in medicine. He who honestly seeks truth must be able and willing to seek light on his problem wherever he may find it. This has been done by a number who have investigated and reported on the usefulness of the intraspinal method. Before attempting to cast sweeping reflections on this work, it would be well for the critic to give evidence that he has reviewed all of it carefully and discriminatingly or, failing in that, to submit to the tribunal of the thoughtful a study made with equal care of a similar series of cases, using the same methods. The cause of truth is aided little by those who deliver ex cathedra opinions unless these opinions are based on recorded facts that may be critically reviewed by others.

The assertion that "there is nothing which the intraspinal method achieves which cannot be accomplished by the intravenous" brings us to the very crux of the

3. Swift, H. F., and Ellis, A. W. M.: The Treatment of Syphilitic Affections of the Central Nervous System, with Especial Reference to the Use of Intraspinous Injection, Arch. Int. Med., September, 1913, p. 331.

4. Ogilvie, H. S.: The Intraspinal Treatment of Syphilis of the Central Nervous System with Salvarsanized Serum of Standard Strength, THE JOURNAL A. M. A., Nov. 28, 1914, p. 1936.

5. Swift and Ellis (Note 3). Ayer, J. B.: Boston Med. and Surg. Jour., 1914, **170**, 452. Draper, George: Effect of Intravenous and Intraspinal Treatments of Cerebrospinal Syphilis, Arch. Int. Med., January, 1915, p. 16. Dexter, Richard, and Cummer, C. L.: The Intraspinal Treatment of Syphilis of the Central Nervous System, According to the Method of Swift and Ellis, Arch. Int. Med., January, 1916, p. 82.

6. Swift, H. F.: Intraspinal Treatment of Syphilis of the Central Nervous System, Another View, THE JOURNAL A. M. A., Dec. 22, 1917, p. 2092.

matter. First let it be understood that we do not raise the question as to the comparative value of the exclusive use of the intraspinal route or the exclusive use of the intravenous route. It is freely admitted that there are many patients who make all the improvement that can be expected with the intravenous use of arsphenamin. Improvements of this sort we see often.

This is well illustrated by the case of J. W., who was seen first in October, 1917, with a marked, almost incapacitating ataxia and severe lightning pains. The history and physical findings were unquestionable. He was given six intravenous injections of the diarsenol brand of arsphenamin, totaling 2.3 gm. His ataxia has entirely disappeared. He pursues his occupation as a railway brakeman without handicap, he is able to walk with his eyes closed in a straight line 40 feet, and he runs about his work in the freightyard as well as his fellow workers. He recently reported that he had played a nine-inning game of ball. The pains are only occasional and not severe. The last laboratory examination showed the blood Wassermann reaction, negative; spinal fluid, cells, 0; globulin —; Wassermann reaction, negative, even with 1 c.c. and a moderate curve in the syphilitic zone with the colloidal gold reaction.

Instances of this kind might be multiplied. We have found, nevertheless, that there are a definite number who would receive no aid if this method alone were available. These group themselves into two classes:

1. Those who because of idiosyncrasy are unable to endure either vigorous mercurial therapy or the intravenous injections of arsphenamin.

2. Those who, though able to stand treatment given in either or both of these ways, show little or no improvement.

In regard to the first group, we have been struck with the number of tabetics who are unable to stand mercury and who, being underweight and in poor general condition, seem to regress rapidly with its use. For them mercury is toxic and must be abandoned. Similarly it is unfortunate that there are many who take repeated intravenous injections of arsphenamin very poorly. While the first one or two treatments may be well borne, the subsequent ones produce gastric symptoms of such severity, or nitroid crises so alarming in nature, that this avenue of attack likewise is closed. It has been objected that we can secure the maximum results with intravenous therapy if given frequently enough. As Fordyce[7] states, it is rarely possible to give arsphenamin as frequently as Sachs stipulates, namely, injections of from 0.3 to 0.4 gm. every three or four days until the patient has received fifteen, twenty, or even 50 injections. Patients who can endure injections of such frequency are unusual, in our experience.

The second group, comprising those who are able to withstand intensive mercurial therapy or intravenously given arsenic but fail still to show a proper degree of improvement, is even more important. It has been our general practice to employ these methods at first, and to adhere to them when the results justified. We have found, however, that in many cases recourse has been had to the intraspinal method. Certainly it does not invariably accomplish as much as one would like to have it, but the results have been striking in a large number of the type of cases just described. This has been definitely established in numerous careful studies to which reference has been made. Our own observation has convinced us of the great usefulness of the method in certain forms of central nervous system involvement. In support of this view abstracts of case histories are appended.[8] Unfortunately, considerations of space forbid the desirable expansion of these reports, but they serve to show briefly the essential features.

It is difficult to assign to all of these cases a definite clinical designation based on a classification that has been rendered obsolete by recent acquisitions to our knowledge of pathology, but we shall divide them into these classes: tabes dorsalis, syphilitic meningitis, paresis, and the spastic syphilitic paralysis of adults.

Intraspinal therapy has been employed in seventeen cases of tabes dorsalis. The results are given in the accompanying tabulation.

RESULTS IN THE TREATMENT OF TABES DORSALIS

Results	No. of Cases
1. Maximum improvement	3
2. Decided improvement	9
3. Moderate improvement	1
4. Slight or no improvement	3
5. Eventual death	1

In the first two classes, which includes approximately 66 per cent. of the total, we have placed those who have shown a restoration to normal from a functional and economic standpoint. Anatomic cure in advanced cases is not claimed, nor can it be expected, since degenerated nerve fibers cannot be regenerated. Very rarely do we see deep reflexes restored or pupillary responses return to normal. In addition, the term "maximum improvement" implies the complete and apparently permanent disappearance of ataxia, sensory signs and symptoms and dorsal root pains, with increase in weight and recovery of normal gait, accompanied by the abolishment of all positive laboratory findings. Cases 2, 4 and 6 fill these requirements:

Case 2.—W. B., man, aged 45, with advanced tabes, who had been infected at the age of 25, had lancinating pains and marked ataxia, and had to walk with a cane and be assisted by some one. There had been symptoms for two years prior to our first examination, May 8, 1913. Four previous intravenous injections of arsphenamin had resulted in only slight improvement. The first laboratory examination showed: Blood Wassermann reaction, +++; spinal fluid Wassermann reaction, +++ with 0.1 c.c.; cells, 75; globulin, +. Twenty intravenous injections of arsphenamin were given, a total of 10.7 gm. Fifteen intraspinal injections (Swift-Ellis) were given, and a little mercury. The last laboratory examination, Jan. 2, 1918, showed: Blood Wassermann reaction, negative; spinal fluid Wassermann reaction, negative, even with 1 c.c.; globulin, +; colloidal gold curve, in syphilitic zone. The patient runs a ranch in the West. He works from 5 a. m. to 9 p. m. He drives a motor on roads on the edge of a canyon. There is no ataxia and no pain. The reflexes are the same. The last treatment was given March 2, 1915. He has been under observation five years. There is a maximum of improvement.

Case 4.—C. H. Z., aged 44, had moderately advanced tabes. The date of infection was not known. There had been symptoms for several years before our first examination, June 5, 1914. Severe gastric crises, lasting several days, left the patient in poor condition and they were frequent enough to interfere seriously with business. There was incontinence of urine. The first laboratory examination showed: Blood Wassermann reaction, not done; spinal fluid Wassermann reaction, +++, with 0.2 c.c.; 62 cells; globulin, +++.

7. Fordyce, J. A.: Truth About Intraspinal Injections in Treatment of Syphilis of Nervous System, a Reply, The Journal A. M. A., Nov. 3, 1917, p. 1482.

8. The majority of the case reports have been omitted on account of lack of space, but will appear in the Transactions of the Section and in the authors' reprints. A copy of the latter can be had on application to the authors.

Eleven intravenous injections of arsphenamin were given, a total of 5.3 gm. Ten intraspinal injections (Swift-Ellis) and one intraspinal injection (Ogilvie), but no mercury, were given. The last laboratory examination, March 10, 1916, showed: Spinal fluid Wassermann reaction, negative, 0.1 to 1 c.c.; cells, 0; globulin, negative. The patient has gained 17 pounds in weight and has had no pain for one year and no gastric crises for three years. The patient manages a business without interruption. The reflexes are unchanged. The gait is normal. The last treatment was given March 10, 1916. The patient has been under observation four years. There has been a maximum of improvement.

CASE 6.—D. W. H., man, aged 39, with moderately advanced tabes, was infected at 25, and the first symptoms, "a nervous disturbance," appeared in March, 1913. Later a "nervous breakdown," associated with dyspepsia, occurred. In October, 1914, stiffness and numbness were noticed in the extremities. Soon after there was severe pain in the back and much difficulty with locomotion. The first laboratory examination, March 13, 1915, showed: Blood Wassermann reaction, negative; spinal fluid Wassermann reaction, negative, 0.1 to 0.5, +++ in 1 c.c.; cells, 2; globulin, +. Nine intravenous injections of arsphenamin, a total of 3.85 gm. Six intraspinal injections (Swift-Ellis) and four intraspinal injections (Ogilvie), but no mercury were given. The last laboratory examination, June 23, 1917, showed: Blood Wassermann reaction, negative; spinal fluid Wassermann reaction, negative, 0.1 to 1 c.c.; cells, 0; globulin, negative; colloidal gold curve, negative. The patient is in active business as a bond salesman. There are no gross signs of trouble. The gait is normal. There is no ataxia and there are no pains. The last treatment was given June 22, 1917. The patient has been under observation three years. A maximum of improvement has occurred.

"Decided improvement" means that although there has been restoration to full earning capacity with all that this implies, there remain certain symptoms, such as a moderate amount of ataxia or occasional though infrequent attacks of pain, or the persistence of positive findings with one or two of the laboratory tests. In other words, the active process seems arrested, but obvious vestiges of the old trouble remain. Case 15 will be given as an example:

CASE 15.—J. W. T., man, aged 42, with advanced tabes, did not know the date of infection. There had been symptoms for ten months previous to the first examination, July 14, 1915. He had severe pains in the extremities, numbness in both feet and the left hand and girdle sensation. The gait was very ataxic. The patient was emaciated and anemic. The trouble had been diagnosed as rheumatism. The pupils were small. They reacted to light and accommodation. The knee jerks and ankle jerks were absent. The patient was practically incapacitated for work. The first laboratory examination showed: Blood Wassermann reaction, negative; spinal fluid Wassermann reaction, +++, with 0.5 c.c.; cells, 57; globulin, +. Eleven intravenous injections of arsphenamin, a total of 4.55 gm. Eight intraspinal injections (Swift-Ellis) and sixteen intraspinal injections (Ogilvie), and a slight amount of mercury were given, which he bore poorly. The last laboratory examination, March 6, 1918, showed: Blood Wassermann reaction, negative; spinal fluid Wassermann reaction, negative from 0.1 to 1 c.c.; cells, 3; globulin, negative; colloidal gold curve, negative. The weight increased 18 pounds. Ataxia is slight now. The color is now good. There is economic restoration. The patient is successful in managing his business There are now only occasional dull aches in old areas. The last treatment was given March 6, 1918. The patient has been under observation three years. There has been decided improvement.

The other classes are self-explanatory. It is noteworthy that only three of the eighteen patients showed no improvement, that only one case progressed to a fatal termination, and that with all of these, it was impossible to push treatment as urgently as we desired.

As syphilitic meningitis we have classed those cases in which the symptoms of an exudative meningeal involvement predominate. All occurred late in the history of the infection. The improvement has been rapid and striking. It has seemed to us that brilliant results have been secured in processes both rapidly progressing and extensive, in which older methods would have been unavailing. As examples, we shall recount the history of two cases:

CASE 1.—W. I. S., aged 29, with syphilitic meningitis, had been infected at the age of 17. The patient had "rheumatic pains" for one year prior to our first examination, Feb. 7, 1913. There was retention of the urine, sudden ptosis of one eyelid and hemiplegia. The first laboratory examination showed: Blood Wassermann reaction, +++; spinal fluid Wasserman reaction, +++, with 0.2 c.c.; cells, 153; globulin, +++. The patient was given thirteen intravenous injections of arsphenamin, a total of 5.73 gm., seven intraspinal injections (Swift-Ellis), one intraspinal injection (Ogilvie) and considerable mercury by inunction and injection. The last laboratory examination, Sept. 13, 1917, showed: Blood Wassermann reaction, +++; spinal fluid Wassermann reaction, negative, even with 1 c.c.; cells, 0; colloidal gold curve, negative. The patient gained 10 pounds in weight. Formerly bankrupt, the patient is now managing a successful business, has paid old debts and works hard. There is no paralysis. The pupils are still abnormal. The knee jerks are absent. There is only an occasional attack of pain. The last treatment was given Sept. 13, 1917. The patient has been under observation five years. There has been decided improvement.

CASE 3.—H. O. B., aged 34, with syphilitic meningitis, suffered a very acute onset and was brought to the hospital for what was supposed to be delirium tremens. Two weeks later there was paresis of the left arm and the left side of the face. There was incontinence of urine and feces. The first laboratory examination, March 21, 1914, showed: Blood Wassermann reaction, +++; spinal fluid Wassermann reaction, +++, with 0.1 c.c.; cells, 550; globulin, ++. The patient had eight intravenous injections of arsphenamin, a total of 4.5 gm., seven intraspinal injections (Swift-Ellis) and a moderate amount of mercury. Last laboratory examination, March 5, 1918, showed: Blood Wassermann reaction, negative; spinal fluid Wassermann reaction, negative from 0.1 to 1 c.c.; cells, 7; colloidal gold curve, negative. The patient works at former employment at the old salary. The memory is slightly impaired for events before the onset of the condition. There is slight facial hemiparesis. Otherwise the patient is normal. The reflexes and pupils are normal. The last treatment was given Sept. 28, 1915, with mercury occasionally since. The patient has been under observation four years. There has been decided improvement.

To employ the terminology that has been defined above, the results may be expressed as being from decided to maximal improvement in all instances.

It may be objected that results equally satisfactory would have been secured had the intravenous route alone been employed. This occurred to us, and in many instances we employed the intravenous method at first, reverting to the intraspinal method only when progress was unsatisfactory. Indeed, it was by instances of this sort that we have been convinced of the usefulness of intraspinal treatment. Fordyce has shown this in a most convincing way. We might cite as illustrative instances from our series Cases 2, 16, 17 and 24. The following abstracted case history will serve as an example:

CASE 17.—G. F. D., aged 36, with early tabes, had been infected at 26. There were numbness and tingling in the hands and a sensation of walking on cotton observed for only a few days before the patient was first seen, Feb. 3, 1916. The first laboratory examination showed: Blood Wassermann

reaction, +++; spinal fluid Wassermann reaction, +++ in 0.1 c.c.; cells, 16; globulin, ++. The patient had fifteen intravenous injections of arsphenamin, a total of 6.75 gm., and eight intraspinal injections (Ogilvie). After the first five injections intravenously *ataxia developed*, so intraspinal injections were used. Much mercury was given. The last laboratory examination, June 5, 1918, showed: Blood Wassermann reaction, ++; spinal fluid Wassermann reaction, +++ in 1 c.c. only; cells, 0; globulin, negative; colloidal gold curve, 1111000000. There is no ataxia. There are no sensory symptoms. The patient works without interruption. There are no physical findings referable to tabes. The last treatment was given June 1, 1918. The patient has been under observation two years and four months. There has been decided improvement.

Of spastic paralysis there are only two cases. One (Case 12) showed slight improvement but regressed. The other (Case 20) has passed out of observation. With definite and unmistakable paresis, when evidence of parenchymatous degeneration was unmistakable, we have had little experience. Such as we have had has been most discouraging. From this, but chiefly from a study of the literature, we should conclude that the method has not given evidence of efficacy in the treatment of well developed paresis. On this point we quite agree with Sachs. There is no doubt that false hopes have been aroused and that altogether too much was expected of intraspinal treatment in paresis. It would seem that remissions may be secured and the period of usefulness prolonged, but permanent arrests are not to be expected. Incidentally, however, it must be remembered that when the disease process has reached the point at which it has produced the typical clinical picture of paresis, irreparable damage has been done. Paresis, however, may be like other conditions, curable if sufficiently early diagnosis is made, but hopeless if allowed to proceed until all classical signs are present.

SUMMARY

It seems quite apparent that each case of syphilitic involvement of the central nervous system presents an individual problem which must be studied as such with the aid of all available methods, be they clinical or laboratory; that it is difficult to fit all cases into a classification made prior to the recent acquisitions to knowledge, when even the syphilitic causation was not unquestioned; that prognosis and occasionally final diagnosis are not possible until the effect of treatment may be noted; that treatment should be administered only in the light of careful preliminary examination; that it should be modified according to the observed changes in clinical and laboratory findings, and that, though not always necessary, intraspinal injections of arsphenamized serum have been more efficacious in many instances than any other available therapeutic measures. We do not feel, any more than does Swift[9] himself, that the use of arsphenamized serum is necessarily the best method that can ever be devised, that it should be employed to the exclusion of other methods of treatment, nor that it should be employed in all cases.

CONCLUSIONS

Five years' experience with the use of arsphenamized serum shows that:

1. Properly employed, it is not in any sense dangerous.

2. Excellent evidence of its efficacy is offered by the patients who repeatedly endure the painful though harmless reactions which frequently follow intraspinal injections.

3. Little or nothing can be expected in fully developed paresis.

4. Much advantage is derived in many cases of tabes dorsalis and syphilitic meningitis when other methods have proved inefficient.

5. The results of the laboratory examinations of the blood and particularly of the spinal fluid must be considered as an integral part of the clinical picture, both in the diagnosis and in the direction of treatment.

6. The improvement in the satisfactory cases has been so definitely consequent on active treatment, and the ground gained over a period of years has been held so well in spite of the lack of recent treatment, that it cannot be explained as a coincident remission in the progress of the disease.[10]

7. The method is a distinct addition to our therapeutic armamentarium.

9. Swift, H. F.: Am. Jour. Syphilis, 1917, **1**, 524.

ABSTRACT OF DISCUSSION

DR. J. A. FORDYCE, New York: The necessity exists for a more efficient method of preventing neurosyphilis as well as for the treatment of it. A negative spinal fluid after the other criteria of cure have been established insures the patient against the development of neurosyphilis. Early syphilis properly treated and controlled by serology of blood and fluid is the best prophylactic measure. Assuming that the nervous system is infected in florid syphilis, its early recognition is imperative, as at this time a cure can be effected in a comparatively short time and the later degenerative stages of the infection prevented.

The observation of twenty groups of familial and conjugal syphilis, comprising about fifty cases, with the experimental work of Nichols, Reasoner, Noguchi and others, strongly support the theory that a strain of spirochetes has been evolved which has a highly invasive power and which may involve the nervous system in the first months of the infection and during or before the administration of arsphenamin and mercury given in the most intensive manner. Convexity or basilar meningitis or cord meningitis yields slowly or not at all to the continued use of remedies intravenously or intramuscularly.

Early syphilitic meningitis is one of the urgent indications for intraspinal therapy. Syphilis of the nervous system of short duration responds to treatment much more promptly than cases of longer duration and offers a more favorable prognosis. A pure type of arterial syphilis of the brain or cord occurs with negative serology or with an excess of globulin only. In such cases intraspinal injections are not indicated, the condition being more readily influenced by the iodids, mercury and arsphenamin intravenously. Disseminated or localized types of cerebrospinal syphilis, often of obscure symptomatology with positive fluid findings which do not yield to treatment administered by the ordinary channels, yield rapidly and permanently to intraspinal treatment.

In optic atrophy with the preservation of a certain amount of vision and with fluid findings indicating meningitis, treatment intraspinally is the best procedure and usually arrests the progress of the atrophy with preservation of vision as in the beginning of treatment.

I have records of nearly fifty cases of various types of neurosyphilis in which the serology of the blood and spinal fluid have become negative and have remained so during varying periods of observation of from two months to three years. The majority of these patients have been completely relieved of their distressing symptoms and have resumed their professional work and occupations. As an additional argument in favor of the method in question, it should be borne in mind that all other therapeutic procedures had been employed without result.

10. This is well illustrated in Cases 1, 2, 3, 4, 6, 9 and 15, in which the patients have been under supervision for from three to five years.

PERFORATING ULCER OF THE HARD PALATE RESEMBLING TERTIARY SYPHILIS

BUT DUE TO A FUSOSPIRILLARY INVASION (SO-CALLED VINCENT'S ANGINA)*

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A man, aged 47, consulted one of us because of an ulcer, which had made its appearance on the roof of his mouth. His previous history was in all respects negative. One day he noticed a little soreness on the roof of his mouth, and a small white spot, to which he paid no particular attention, until within a few days an ulcer developed, gradually becoming larger and more painful. Despite his negative history, a syphilitic condition was suggested by several physicians.

Physical examination revealed slight anisocoria, rather marked oral sepsis and gingivitis, especially around the posterior molars, an unpleasant fetid odor to the breath, and a well defined punched-out ulcer, about the size of a dime, situated on the hard palate, covered with a thick, creamy, easily removed exudate, and surrounded by a deep red, somewhat indurated areola. The base of the ulcer bled easily. The clinical picture certainly justified the suspicion of syphilis, a view concurred in by a nose and throat specialist. The patient was afebrile and not sick.

Laboratory studies revealed a normal blood picture, and the Wassermann reaction was negative with each of three different sets of reagents. Smears made from the exudate showed enormous numbers of *B. fusiformis*, and many coarse, readily stained spirochetes, presenting from five to eight wide undulations. A diagnosis of so-called Vincent's angina was made, and the lesion promptly healed in a few days under treatment with dichloramin-T and local applications of concentrated arsphenamin solutions. There has been no recurrence.

BRIEF HISTORICAL SUMMARY

Since the discovery and recognition of diphtheria in 1882 by Klebs, there has been noted with increasing frequency, the occurrence of diphtheria-like lesions on the tonsils and elsewhere in the mouth, apparently caused by a fusiform bacillus, in association with a spirochete of large size. Though the organisms were first described in 1883 by Miller, an American dentist, who further noted their occurrence in both normal and dirty mouths, the first article of real moment came from Plaut in 1894. Between the years 1896 and 1905, Vincent wrote a number of very comprehensive articles on both the organisms and the associated clinical findings, as a result of which the condition came to be called Vincent's angina. A full discussion of the question of priority is to be found in Eichmeyer's excellent monograph.[1] During the last ten years, scattered articles have appeared, but no especial interest was attached to a presumably uncommon malady, until a very high incidence of an ulcerative stomatitis was observed among British and French troops. The disease broke out sporadically, was usually preceded by a sore throat, and became so common that it constituted, according to Bouty,[2] 23 per cent. of all throat infections. It was soon found that the lesions were invariably associated with a mixed invasion of fusiform bacilli and spirochetes, and the condition was commonly referred to as "trench mouth," "trench throat" or "trench gums." Probably the condition has no association with trench life as such, but its dissemination is favored by the collection in camps of large numbers of young men. As a minor cause of temporary or often prolonged invalidism, the malady ranks high, and is therefore worthy of much more attention at the hands of both civil and military practitioners. Already, careful studies by McClintock,[3] McKinstry[4] and others, of so-called "normal mouths" have proved that there are many healthy carriers. This form of stomatitis may be very infectious in type, as was shown by the occurrence of more than 200 cases within two days among 800 prisoners in one of the German camps. The disease apparently has a universal distribution, and it is not at all selective as to sex, social conditions, occupation or season. Finally, though poor resistance, the promiscuous use of pipes, tooth brushes, etc., excessive smoking and climatic conditions have all been regarded as possible predisposing causes, it has been established beyond all doubt that one condition above all others exerts an influence favorable for the development of this type of ulcerative stomatitis, namely, oral sepsis, peridental gingivitis or pyorrhea.

DEFINITION OF THE DISEASE

As generally employed, the term "Vincent's angina" usually refers to an ulcerative lesion of one or both tonsils and due, apparently, to a fusospirillary invasion. There is little doubt that this is the commonest type encountered clinically, one often mistaken for diphtheria or syphilis. Vincent's original classification of the lesions has usually been accepted, according to which the cases fall into one of two groups, either one of which may run its course in a few days or persist for weeks.

A. The superficial, pseudomembranous or diphtheroid form, in which a thin, grayish white film usually starts over one tonsil and gradually spreads, often over a wide area. As a rule the membrane is easily removed, though not *en masse*, leaving a red, bleeding base and a shallow ulceration. There is generally an associated diffuse pharyngitis.

B. The ulcerative, and more common form, in which there is deep tissue necrosis, covered by a thick, creamy, yellowish or gray exudate, which comes away easily and again leaves a raw, granular, bleeding base. This leads to the formation of crater-like ulcers, with irregular, somewhat indurated and undermined edges. Both forms show a tendency to be unilateral.

This description of the lesions answers well enough. We now know, however, that ulcerative lesions of this type may occur in many places, including various portions of the mouth, the bronchi, gastro-intestinal tract, and, in a few instances, the genitalia, causing there the so-called "fourth venereal disease" closely simulating chancroid. Campbell and Dyas[5] give the following definition: "Vincent's angina is an infectious disease of the mucous membrane of the mouth, throat, bronchi and prepuce." The term "angina" (from the Latin *angere*, to choke) is quite loosely and incorrectly used in medical writings generally, and should be applied only to those diseases or conditions characterized by

* Read before the Section on Practice of Medicine at the Sixty-Ninth Annual Session of the American Medical Association, Chicago, June, 1918.

1. Eichmeyer: Ergebn. d. allg. Path. u. path. Anat., 1904, **10**, 106.
2. Bouty: Brit. Med. Jour., 1917, **2**, 685.
3. McClintock: Am. Jour. Med. Sc., 1917, **153**, 256.
4. McKinstry: Practitioner, London, 1917, **99**, 507.
5. Campbell, A. R., and Dyas, A. D.: Epidemic Ulceromembranous Stomatitis (Vincent's Angina) Affecting Troops, THE JOURNAL A. M. A., June 2, 1917, p. 1596.

spasmodic symptoms of suffocation or choking, and hence particularly to diseases of the throat. The term "Vincent's angina," therefore, should be restricted to a peculiar type of throat or mouth affection, due to an unusual and possibly specific bacterial infection. It should be noted in passing that attacks of choking or suffocation in these cases are most uncommon. The term "ulcerative stomatitis" is not comprehensive enough, and, of course, does not convey any notion as to the etiology, since infective disorders of the buccal cavity and pharynx include a great number of conditions, due to different micro-organisms. As a result of the more recent studies, a far better conception is the recognition of numerous types of mouth infection, all due apparently to the same variety of invasion, *and to limit the term "Vincent's angina" to such infections of the tonsils proper.* One is inclined to agree with Bowman,[6] who feels that we should speak rather of Vincent's disease, under which are included all forms of this peculiar fusospirillary ulceration, no matter where located.

CLINICAL VARIETIES

Leaving aside, at this time, the unusual bronchial and genital forms of the disease, one may easily tabulate the various types encountered in the buccal cavity. Two classifications have been advanced:

1. McKinstry groups the cases in the order of the frequency of their occurrence in his experience, as: (*a*) affections of the gums; (*b*) affections of the tonsils (Vincent's angina), and (*c*) affections of the mucous membranes of the buccal cavity. This classification possesses the valuable point of emphasizing one most significant fact, namely, that the commonest primary form of the disease is an ulcerative, peridental gingivitis, especially common around the lower incisors, posterior lower molars, crowned teeth, and between irregular ones. In these cases the only possible confusing condition is pyorrhea, from which it can be easily diagnosed, according to McKinstry, first, by the character and appearance of the ulceration, secondly, by the association of fetor and considerable gingival pain and bleeding, and, finally, by the absence of pus between the tooth and the gum. J. S. Marshall of Chicago thus describes the condition:

> The clinical characteristics are the formation of ulcers at some point of injury, which at first appear in no wise different from the ordinary form of a localized ulcerative stomatitis, but which, after the lapse of twenty-four to forty-eight hours, begin to spread rapidly along the margins of the gingivae in all directions, involving both jaws, and sometimes extending to the hard palate and the floor of the mouth. The margins of the gums assume a general ulcerative condition, accompanied by swelling, redness and considerable congestion of the parts, which bleed easily. Later they become covered with a dirty-white or yellowish-white pellicle or membrane—somewhat resembling the thrush film—which sloughs off after a day or two, destroying the festoons and leaving a ragged surface. The denuded surface is very red and covered with coarse granulations, which bleed upon the slightest provocation. The gums are loosened from the necks of the teeth, and the borders of the alveolar processes are exposed. Pus mixed with blood exudes from the inflamed tissue about the necks of the teeth. The breath and excretions are very fetid, and salivation is profuse. In these respects the symptoms resemble mercurial ptyalism. The ulcerated surfaces are exceedingly sensitive, and motions of the tongue and lips on this account are very painful. Food is taken with difficulty. Accompanying the local manifestations there is a general febrile condition, temperature ranging from 100 to 101 F., thirst, loss of appetite and general malaise, sleeplessness, and irritability of temper.

McKinstry is quite convinced that this form of gingivitis is always the primary lesion, from which extension to the tonsils, palate, etc., occur.

2. Campbell and Dyas, in an analysis of 129 cases arranged in the order of their incidence, divide their cases thus: Type I, tonsillar cases; Type II, ulcers on the lower jaw behind the last molar; Type III, gingival cases, and Type IV, general infection of the buccal cavity.

There is, perhaps, no essential difference between the two groupings, and variations in the occurrence of the tonsillar or gingival form probably depend in great part on the stage at which the patient is first seen. Obviously, careful observation of the gums and more consistent attempts to rule out this condition from true pyorrhea are strongly needed. The disease is seldom found in a clean mouth, that is, one in which the gingivae are normal.

SYMPTOMATOLOGY

Objectively one notes:

1. Insignificance, as a rule, of constitutional disturbances. The patient is not very ill.
2. Absence of fever, the temperature rarely rising over from 100 to 101.
3. Heavy and offensive breath.
4. Enlargement of the cervical and submaxillary glands, as a rule moderately. They are tender and never suppurate.
5. The lesions proper.
6. Swollen, spongy and bleeding gums, suggestive of scurvy.

Subjectively, the patient complains of:

1. Extremely bad taste in the mouth.
2. Tenderness of the gums, so that the use of a tooth brush is impossible, and mastication is so painful as to preclude eating.
3. Pain on swallowing.
4. Looseness of the teeth, with salivation, which is common, resembling mercurial ptyalism.
5. Anorexia.
6. Joint pains, frequently.
7. Lassitude—"lack of go."
8. "The most serious constitutional symptom and one always present when the teeth and gums are affected is severe depression."

LABORATORY FINDINGS

1. Blood cultures are uniformly negative.
2. The Wassermann reaction in all cases of Vincent's disease is negative in nonsyphilitic patients. The presence of a positive reaction does not exclude Vincent's disease, and the experience has shown that patients with a syphilitic history, undergoing mercurial treatment, are especially prone to this form of mouth lesion.
3. The leukocytes are rarely increased over 10,000: anemia does not develop in the majority of the cases.
4. A transient albuminuria is common in the more severe cases.
5. Smears from the lesions show the characteristic organisms—a fusiform bacillus and a coarse spirochete, in association with numerous other organisms.
6. Dark field illumination aids greatly in eliminating the *Spirochaeta pallida.*

6. Bowman, F. B.: Proc. Roy. Soc. Med., 1915, **9**, Part 2, p. 51; Lancet, London, 1917, **2**, 536; Brit. Med. Jour., 1916, **1**, 373.

COURSE OF THE DISEASE

Most cases run a benign course, clearing up in from a few days to one or two weeks. Recurrences are common, especially in the primary gingival cases, inadequately treated. In some instances, however, the disease may assume a much more virulent form, accompanied by high fever, bleeding from mucous membranes generally, extensive purpura and profound prostration. A number of cases are now on record occurring in civilian and military practice that have terminated fatally. "The most destructive and fatal forms of gangrenous necrosis in which these organisms are found often occur in subjects with leukemia or one of the other essential blood diseases." [7]

THE BACTERIOLOGY OF VINCENT'S DISEASE

The examination of smears made directly from an ulcer always shows a great variety of organisms, but two in particular tend to predominate. These are:

1. The *Bacillus fusiformis*, first noted by Vincent in cases of hospital gangrene. The bacillus is from 5 to 10 microns long, is slightly curved, pointed at the ends, and thickest in the middle, where there is often a single transverse, colorless band, giving the appearance of two prisms with their bases opposed. The organisms are often arranged in pairs. The bacillus is sometimes beaded, owing to the occurrence of a number of granules in the protoplasm. It is anaerobic, nonmotile, according to most observers, gram-negative, does not form spores, and stains readily with basic anilin dyes and weak solutions (25 per cent.) of carbolfuchsin. In cultures as well as in smears, the bacillus may present marked morphologic variations; small forms, comma-shaped and, if end to end, simulating a spirillum, may be seen side by side with delicate rods or threads as long as from 50 to 100 microns.

2. The spirochetes which invariably accompany these fusiform bacilli are slender, of fairly large size, pointed at the ends, gram-negative, and stain only feebly with ordinary dyes, though much more readily than does the *Spirochaeta pallida*. They show on an average from five to eight wide, irregular convolutions. The existence of an undulating membrane and absence of flagella are mooted points, which must be settled if the generic term "spirochete" is correct. Seen by dark field illumination, they are very actively motile, lashing around with a whiplike or rotary motion, and not the longitudinal corkscrew-like movement of the *Spirochaeta pallida*. They are thicker than the *Spirochaeta pallida*, appear yellowish rather than white, and there is no geometric regularity to the spirals. The organism is readily distinguished from the *S. dentium* and *S. refringens*. Like the bacillus, it is anaerobic.

Cultivation and Identity of the Organisms.—Briefly, the cultivation of these anaerobes has been found extremely difficult by most observers. It is doubtful if the spirochete has ever been isolated in pure form and kept alive over more than two or three generations. The bacillus grows best in fluid mediums in the presence of tissue, and a small percentage of sugar (0.5 per cent.). Krumwiede and Pratt[8] assert that blood or serum is also necessary for satisfactory growth. In serum-glucose broth a flocculent growth occurs at the bottom of the tube, the upper layers remaining clear. The organisms form indol readily. Petri dish colonies are small, but slightly elevated, gray, thin, translucent and show festooned margins.

It has been noted that the relative numbers of the organisms under discussion vary much with the type and stage of the disease. Thus, bacilli tend to predominate in the superficial layers of the ulcer, and spirochetes are relatively few. When the slough is fully formed, the spirochetes occur in greater numbers: moreover, at this stage, one frequently encounters bacilli apparently linked to spirochetes. In 1911, Ruth Tunnicliff[9] grew the bacilli under anaerobic conditions, and on the subsequent transfer to Loeffler's blood serum, at room temperature, she noted that the bacilli tended to lose their pointed ends and become filamentous or spirillary in form. Since then, not a few have held that the two forms seen in lesions are only different stages in the life history of one organism. Many consider the two organisms quite distinct and always growing in symbiosis. Greeley[10] has recently stated that the spirochetes and fusiform bacilli are one and the same organism: "This belief is wellnigh universal among authorities." The evidence for such a positive statement is by no means conclusive. Since the days of Cohn, Zopf, Lister and Billroth, the whole question of the pleomorphism of bacteria has been hotly discussed. Now it is quite generally agreed that the majority of forms are uniform, showing but one type throughout their life history. Admitted exceptions occur, but they are certainly rare. As a result of long studies, Krumwiede and Pratt state quite as positively that the two organisms are in no sense related. According to them, typical spirochetes, as seen in the original smear, are never encountered in cultures; dark field studies of cultures have never shown forms that resemble the original spirochetes; spirochetes can be kept alive in serum, while the bacilli die out. And, finally, if pure cultures of the *B. fusiformis* are repeatedly transplanted to the same medium, they show no morphologic changes.

Specificity of the Organisms.—Inoculation experiments from both the original material and pure cultures have been singularly unproductive of the characteristic lesions in the hands of most observers. It has not mattered how the inoculations are made, whether into artificial wounds, subcutaneously, or intravenously. These results may possibly be explained on the assumption that, like the tetanus bacillus, ancillary organisms or damaged tissues must be present before the *B. fusiformis* or the spirochete, or both, in symbiosis, can produce pathologic changes. As the identity, therefore, of the two organisms is undecided, and since the postulates of Koch have in no sense been fulfilled, the crucial demonstration that these organisms are the specific cause of Vincent's disease is at present lacking. This much we do know:

1. In all of the lesions under discussion the organisms are present, as a rule in enormous numbers, and often virtually in pure culture. The severer the infection, the greater the number of organisms.

2. There is positive evidence both as to the infectiousness and the contagiousness of Vincent's disease.

3. Healing of the lesions goes on parallel with the disappearance of the organism. When complete, no organisms remain.

"These facts may be taken as adequate proof that if the organisms are not the only, they are certainly an essential factor in the causation of these lesions, which

7. Barnes: Medical Clinics of North America, January, 1918, p. 997.
8. Krumwiede and Pratt: Jour. Infect. Dis., 1913, **12**, 439.
9. Tunnicliff, Ruth: Jour. Infect. Dis., April, 1911.
10. Greeley: Am. Jour. Med. Sc., 1918, **155**, 742.

constitute a clinical picture distinctive enough to be considered an entity and so regarded, by the consensus of present opinion."

THE DIAGNOSIS OF VINCENT'S DISEASE

Though infrequently mistaken for other conditions, the diagnosis of Vincent's disease, and particularly of Vincent's angina, is relatively easy and should present no difficulties. The essential points always to be borne in mind are:

1. The usual disproportion between the constitutional symptoms and the appearance of the lesions. "The patient should be sicker than he is."

2. The clinical history.

3. The negative laboratory findings with the one exception of smears made from the ulcerative lesion.

The other ulceromembranous lesions of the mouth and throat that require consideration may be briefly enumerated:

1. *Diphtheria.*—In this condition the constitutional reaction is usually outspoken. The throat is generally affected on both sides; dysphagia is not so pronounced, and a cervical adenitis is less common; when present, the glands are not so tender. The membrane is much tougher and harder to remove, and may come away en masse. Finally, throat smears show the characteristic Klebs-Loeffler bacilli, and cultures are positive. Vincent's organisms may coexist with those of diphtheria, but should give rise to no confusion. On the other hand, diphtheria bacilli in any considerable number are invariably absent from the mouth lesions of Vincent's disease. It is claimed that morphologically the organisms of diphtheria and Vincent's disease may resemble each other. This is a remote possibility; in case of doubt, the use of Gram's stain should suffice, since the *B. fusiformis* is gram-negative, the *B. diphtheriae*, positive.

2. *Syphilis.*—Vincent's disease undoubtedly may be confused with syphilis, as was true in the present case. Moreover, it may be and probably often is superimposed on a syphilitic infection of the mouth or throat. Throughout the literature, scattered contributions are found in which it is maintained that in uncomplicated cases of "Vincent's angina" the Wassermann reaction is often found to be positive. This view is held by St. Clair Thomson, Much, Sobenheim[11] and others. Critical analysis of the cases thus reported shows that the statement rests on decidedly flimsy evidence. Those who have had the greatest experience agree that though a positive Wassermann reaction does not exclude Vincent's disease, and though in some isolated cases neither the clinical appearances nor the microscopic findings are sufficient to establish a definite diagnosis with certainty, none the less serologic findings are invariably negative in uncomplicated cases of Vincent's disease. Recently Taylor and McKinstry[12] have conduced studies to clinch this point. From a large number of cases of Vincent's disease, fifty-five were chosen at random; fifty-three gave absolutely negative Wassermann reactions, while two were positive. Both of these patients admitted a primary infection. The authors conclude that "the prevailing belief in the occurrence of a positive Wassermann reaction in Vincent's angina has no foundation in fact, and that the two conditions can be differentiated with absolute certainty by the application of bacteriologic and serologic methods. When the Wassermann reaction is positive in cases of Vincent's angina, then a double infection exists, either as a coincident syphilitic and Vincent's infection, or as the occurrence of Vincent's angina in a subject with latent syphilis."

3. *Tonsillitis.*—The usual variety of tonsillitis is easily ruled out by the appearance of the lesions, follicular in type, the marked constitutional symptoms, leukocytosis and tonsillar smears.

TREATMENT

The condition usually responds readily to treatment, the essential points of which are:

1. "A good dentist is one of the best therapeutic measures." The care of the mouth is essential.

2. Local applications, of many kinds, have been recommended, such as iodin, silver nitrate (10 per cent.), chromic acid (5 per cent.), zinc sulphate, and numerous others. Based on sound reasoning, Emrys-Roberts[13] devised a lotion consisting of hydrogen peroxid, 5 fluidounces; wine of ipecac, 3 drams; glycerin, 5 drams, and water, sufficient to make 8 ounces.

To this some have made the further addition of liquor potassii arsenitis (Fowler's solution). The ulcers are swabbed with this solution two or three times a day, and all patients, whether the gums are affected or not, are instructed to put from 10 to 15 drops on a tooth brush, twice a day, and to brush the teeth and gums vigorously. Improvement and cure are rapid.

There is abundant evidence that the best drug to employ is arsphenamin, especially in the severer cases showing deep tissue necrosis. Ehrlich[14] himself, in 1910, noted rapid healing in a case after one intravenous injection of arsphenamin. Many have since noted similar results. Just as striking are the prompt cures effected by the local application of arsphenamin solutions, or suspensions in glycerin, two or three times daily.

3. General measures should include strict isolation, a high caloric diet in liquid or semisolid form, sodium cacodylate injections daily, and such symptomatic therapy as the individual case requires. All authorities warn against the use of mercury for syphilis associated with Vincent's disease, before the local lesion is cured. Mercury undoubtedly tends not only to increase the incidence of Vincent's disease, but greatly to prolong its cure.[15]

SUMMARY AND CONCLUSIONS

Evidence has accumulated in the last few years to show that ulcerative lesions of the mouth and throat of a nonsyphilitic nature are extraordinarily common among the Allied troops. These conditions are the cause of much unnecessary and expensive invalidism; they are probably wholly preventable and hence not to be tolerated. Military and civil practitioners should constantly bear in mind the following well established points:

1. Vincent's disease is in all likelihood a primary peridental gingivitis, occurring frequently in certain particular areas, liable to develop anywhere in ill kept mouths, associated with characteristic gum lesions, and

11. Sobenheim: Arch. f. Laryngol. u. Rhinol., 1909, **21**, 5.
12. Taylor, F. E., and McKinstry, W. H.: Brit. Med. Jour., 1917, **1**, 421; Proc. Roy. Soc. Med., 1917, **10**, No. 3; Brit. Med. Jour., 1918, **1**, 82.
13. Emrys-Roberts: Brit. Med. Jour., 1917, **2**, 359.
14. Ehrlich: Münch. med. Wchnschr., 1910, **57**, 2268.
15. In addition to the references already given, the following will be found of interest:
Vincent: Deutsch. med. Wchnschr., 1894, **99**, 922.
Saverio: Arch. ital. di oto. rinol. e laringol., 1910, **21**, 177.

capable of spreading to any part of the buccal cavity or throat. The disease is both infectious and contagious.

2. The lesions most often seen clinically are ulcerations of the tonsils, to which the name "Vincent's angina" should be restricted.

3. No matter where located, the lesions of Vincent's disease are caused by the activities of the *B. fusiformis* and an associated spirochete. Their specificity is as yet unsettled. It is quite likely that they normally are symbiotic saprophytes, capable under certain conditions of causing pathologic changes.

4. The diagnosis of Vincent's disease from diphtheria and syphilis is simple. Smears from the lesions usually suffice.

5. Cases of uncomplicated Vincent's disease invariably give a negative Wassermann reaction.

6. The local application of concentrated solutions of arsphenamin is regarded as the best form of therapy. Most cases clear up within a few days.

7. Prophylaxis is better than cure. Oral sepsis is inexcusable.

ABSTRACT OF DISCUSSION

DR. W. H. MARSHALL, Flint, Mich.: During 1916 and 1917, while with the British forces, I saw many of these cases. Dr. Bowman of Toronto found an *Ameba buccalis* that was symbiotic with the organisms described by Dr. Miller. In some forty cases he also found this ameba with the spirillum, and, based on these findings, we used wine of ipecac, half an ounce, for its action on the amebas, liquor potassii arsenitis (Fowler's solution), half an ounce, and a dram of glycerin locally in the mouth, applying it with a cotton swab two or three times a day. Our cases cleared up rapidly with that simple form of therapy.

DR. FRANK J. SLADEN, Detroit: There are three points of interest emphasizing the importance of Dr. Miller's paper. First, Vincent's angina is a more common condition than is recognized. The best dentists see it frequently, and believe it is within their domain. The majority of cases are of the membranous type, recovering under simple mouth and throat measures, a frequent reason for the lack of effort leading to recognition. The occasional experience of trying to control an advanced, serious case impresses on one the advantage of early institution of proper measures. Second, the problems of conflicting diagnoses do not always seem as easy as Dr. Miller presented them. The membranous stage has its relation to diphtheria. Such a diphtheritic membrane has been the basis of uselessly exposing a patient to the expensive and sensitizing antidiphtheric serum. The difficulty, after failure to distinguish the differences in the membrane, lies in the fact that the laboratory diagnosis of diphtheria depends on cultural efforts rather than on the smear. The organism of Vincent's angina is poorly viable and usually in this way late negative results are obtained before the telltale smears are searched. Third, in relation to syphilis: At the ulcer stage there is similarity in the location and character of the ulcer and in the residual deforming scars. The latter may be very misleading. It is interesting also that a spirillum is associated though easily distinguished from the *Spirochaeta pallida*. In the face of a negative Wassermann reaction, and no other syphilitic stigmata, there is frequently quick response to arsphenamin. Arsenical preparations are indicated. Ready recovery usually occurs, but I recently dealt with a fatal case which had already advanced beyond control of local measures, a case in which the larynx was involved, with a bronchopneumonia. Intravenous injections of arsphenamin were of no avail. Earlier recognition might have changed the outcome.

DR. HENRY A. CHRISTIAN, Boston: Two points in connection with this condition are of interest. The first is this striking similarity of some of the cases to a syphilitic lesion, and the possibility of some old cases of perforation of the palate or the septum of the nose in which the Wassermann is negative and in which there is no history of syphilis and no sign of syphilis being of this origin. The other point of interest is whether the organisms found are the cause of the condition. I have always felt very skeptical about that. The organisms are easily found, but are they the cause of the lesions? The reason for my skepticism is this: Usually, when you get chronic throat conditions from any cause, with superficial ulceration, you find these organisms. The organisms are inhabitants of the mouth under normal conditions; at least similar organisms are found in the mouth. In a number of cases of advanced nephritis you get ulcerative conditions in the mouth, and the laboratory reports the finding of the Vincent's organism in these cases.

Sometimes, in treating syphilis, you are unfortunate enough to produce a mercurial stomatitis, and then you find these organisms in those cases. In noma in children the destructive lesions in the mouth show these organisms on the surface and underneath, and it has always been disputed whether these organisms or some streptococcus or some unknown organism is the cause of noma. It seems to me that there is considerable reason for doubting the spirillum and the fusiform organism as being the cause of the condition. They are extremely useful from the viewpoint of the diagnosis, because the finding clears up in your mind whether or not it is diphtheria and whether or not it is syphilis. I think evidence is lacking that they are the definite cause, and, as one speaker has said, he very commonly found amebas. Are amebas the cause? You nearly always find some other bacteria, as streptococci. Are they the cause? Or is there something else which is the cause? From my personal ideas and experience, I do not think that we know.

DR. SYDNEY R. MILLER, Baltimore: One or two points have been brought up in the discussion to which I would like to refer. First, I had thought and hoped that I had left the distinct impression that the situation was anything but positive with reference to the relation of the organisms in question to the condition of Vincent's angina. There is the greatest doubt in my mind, and I should like it thoroughly understood, that the specificity of these organisms is not yet a proved fact. What we do know is that they occur in these conditions almost exclusively, though it is known that they exist in other ulcerated conditions of the mouth, and may be, indeed, normal mouth inhabitants. It is possible that they become pathogenic under conditions such as are necessary for the tetanus bacilli, requiring both ancillary organisms and local injury before they can assume pathogenic activities. Second, it has been emphasized that possibly the frequency of this condition among soldiers has been brought on in part by vigorous antisyphilitic treatment. It is, apparently, true that the use of mercury, in that it favors stomatitis, predisposes to the condition, and it is certainly true that mercury should not be used when Vincent's angina exists. It would seem to me that in view of the increased frequency of these conditions of Vincent's infection, in view of the fact that Ellermann has apparently been able to reproduce the lesions in tissues previously damaged, that it is at least safe to assume for the present that these organisms are potentially quite capable of producing much harm and temporary invalidism to men, both in civil life and under military surroundings.

There are so many facts that point to the possible seat of the trouble around the teeth that it should be every one's duty to watch for the earliest signs of infection.

Milk and the Children.—It is the duty now of every individual community to see that its children have milk of good quality and in sufficient amount to assure their normal development. To do this the price of milk must be controlled or fixed, and the milk supply to infants and children carefully safeguarded. The malnutrition of our children was, even before 1914, a serious national problem and one demanding urgent attention. Poverty and ignorance of dietary essentials have been ever-present factors in the malnutrition of the young and war conditions cannot fail to increase the gravity of the situation and the difficulties of maintaining the health of the Nation.—Bulletin, Federal Children's Bureau.

EFFECT OF PROLONGED BILE DRAINAGE IN THE CURE OF SUBACUTE AND CHRONIC PANCREATITIS*

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The object of the present small investigation was to discover, so far as was possible, the effect of bile drainage on that swelling of the pancreas that we loosely call pancreatitis in such patients as recover and regain some degree of their previous health. The only criterion of judgment available in all but one or two of the patients was the recurrence or the absence of symptoms similar to those for which the operation had been done. For the purposes of the investigation, all case reports were taken in which the operator had set down the fact that the pancreas was to palpation hard, enlarged, nodular, swollen, etc., whether infection of the bile tract or gallstones was present or not. It is recognized that, in making such a palpatory diagnosis of pancreatitis, one must reckon with the personal equation to a certain extent, and, to that extent, naturally, with a margin of error. Nevertheless, when the operations have been done by men of recognized ability, known to be conservative in their attitude, as was the case in the present series, such a margin of error is certainly a small one. In the second place, it should be premised that the cases of this series were all of the subacute or chronic recurring type of mild grade, together with a few acute cases in which the patients recovered. The type is familiar to the operating surgeon. During an operation undertaken usually for gallstones, which may or may not be present, examination reveals a variable degree of thickening and hardening of the pancreas. If gallstones are present, these are removed, bile drainage is instituted, and the surgeon from experience knows that the pancreatitis may be left to get well of itself. Besides, he usually feels that the bile drainage alone is proper treatment for the pancreatitis. If, on the other hand, gallstones or other possible causes are not found, he very properly drains the bile all the same, usually by a cholecystostomy. Recently, Dr. Judd[1] has said that a cholecystectomy is more certain of curing the pancreatitis than a cholecystostomy.

In the pancreatitis cases of the Royal Victoria Hospital, whose records I have gone over in this connection, there were very few cholecystectomies done. Up to lately, at any rate, it has been felt, in general, that if pancreatitis were present, and the gallbladder was not irreparably diseased, it was safer to conserve the gallbladder as a sort of safety valve to forestall undue rises of pressure in the biliary passages, or to serve for a short-circuiting operation if subsequent lesions in the common duct or the pancreas should ever render that necessary. Consequently, in our hospital, a tube has usually been placed in the gallbladder, and the bile drained for a variable time, in cases of pancreatitis associated with gallstones.

STATISTICAL RECORD OF OPERATIONS

Out of a total of a little more than 500 case records of operations on the bile passages, I find the pancreas specifically mentioned in 105 as being enlarged, hard, nodular, etc. Follow-up letters were written to the 105 patients and forty-one replies were received, of which only thirty-three were available for proper analysis. These thirty-three cases, then, I have tried to analyze with regard to the effect of bile drainage on the recurrence of symptoms.

Such an analysis immediately meets one difficulty and is open to one objection in particular. So many of the patients suffered coincidently from gallstones that one might reasonably inquire whether the recurrence or the persistence of symptoms might not be due to recurrence of gallstones or of cholecystitis, or to adhesions rather than to that of pancreatitis. In the absence of relaparotomies, such an objection cannot positively be set aside. Nevertheless, I have considered it justifiable to assume that a properly conducted operation for gallstones is but very rarely followed by recurrence; and, consequently, that, when a letter declares that the patient suffers from symptoms similar to those of the preoperative attacks, such symptoms are presumably due to the coincident pancreatitis.

There were twenty-four cases of cholecystostomy. I have divided these as to duration of drainage into periods. Of these fifteen had a tube in the gallbladder for two weeks or less. Of this number, only three profess themselves cured; five say they are improved, some very much so, but they still have a good deal of pain in the pit of the stomach and the upper abdomen generally; in three the pain is accompanied by nausea or vomiting, coming on irregularly, at a variable time after food; and, finally, seven say they still suffer from the same trouble as before operation, that is, attacks of epigastric pain, sometimes with vomiting, and, in two instances, with jaundice. So only three of fifteen were cured, and seven have persisting trouble, while five were improved only.

There were four cases in which bile drainage was kept up more than two weeks, but not more than three weeks. Of these, three say they are cured and one is much improved, although still subject to epigastric pain at intervals that are gradually growing longer.

Finally, there were five cases in which the bile was drained longer than twenty-one days, that is, 28, 40, 42, 44 and 59 days respectively. The patients all say they are quite cured. The most recent one was operated on a year ago, the others six, eight, eight and sixteen years ago. One of these, who was operated on for gallstones ten years ago, and in whom no stones or other lesions of the bile tract were found, while the pancreas was diffusely enlarged to twice its normal size and also hardened, had the wound closed without bile drainage or other therapeutic measure. She had numerous and somewhat severe attacks of epigastric pain, sometimes with light jaundice, during the next two years, and was finally reopened, when the pancreas was found again to be the only organ involved and slightly larger than before. This time a tube was put in the gallbladder, the bile was drained for fifty-nine days, and since then, eight years ago, she has been entirely free from her old pain.

The cholecystectomy cases number only four. Of these three write that they are cured. These drained bile through a tube in the common duct for seven, twelve and twenty-two days respectively. In the fourth case, the abdomen was closed. No drain was inserted, and this patient complains of the same trouble as before operation.

In three patients, all operated on about ten years ago, in whom operation revealed pancreatitis without

* Read before the Section on Surgery, General and Abdominal, at the Sixty-Ninth Annual Session of the American Medical Association, Chicago, June, 1918.

1. Judd, E. S.: Ann. Surg., 1918, 67, 473.

bile tract lesions, and in whom no drainage was instituted, the symptoms continued just as before operation. One of these was cured later, as already related, by bile drainage, for fifty-nine days; another died after three years of "stomach trouble," and a third still complains of constant "indigestion" with pain in the epigastrium and the left side.

Finally in one patient, the mass in the head of the pancreas seems to have been a direct extension of a mass in the pylorus, presumably an ulcer, inasmuch as a gastro-enterostomy gave lasting relief.

GENERAL RESULTS OF TUBE DRAINAGE

While it is perhaps not quite justifiable to draw any far-reaching conclusions on the basis of so small a series of cases, in view of the lack of that exact knowledge which only a relaparotomy can furnish, I feel, nevertheless, that the results recorded are at least suggestive. The general fact stands out clearly enough, that, the shorter the drainage of bile, the more likely to persist were symptoms similar to those complained of before operation, and that when the drainage was prolonged for four weeks or more, all such patients were cured permanently. Whether gallstones were present or not did not seem to make much difference.

I should therefore like to enter a plea for a more prolonged drainage of bile than I believe has hitherto been usual in most clinics. If one is going to leave the gallbladder in, I think a wise plan is to stitch the organ to the parietal peritoneum, leaving the cholecystostomy opening at the level of the rectus sheath, and to refrain from the inturning purse-string stitch, so that the mucosa-lined opening may not close too quickly if the tube is pulled out accidentally.

What is the rationale of bile drainage for pancreatitis?

It used to be thought that such drainage was used chiefly in order to get rid of infection in the bile. But a revival of our knowledge concerning the sphincter at the outlet of the common duct, first described by Oddi, the Italian physiologist, more than thirty years ago, together with the observation that a majority of cases of pancreatic swelling are unassociated with gallstones or infection in the common duct, has shown us that the keynote in the treatment of pancreatitis is not so much mere drainage of possibly infected bile as it is reduction and prevention of rises of pressure in the biliary system. The sphincter, it would seem, may without difficulty be provoked into spasm under certain as yet not well known conditions; and the consequent rise of pressure in the bile tract may force bile into the pancreas and so set up a pancreatitis of varying degrees of severity.[2] Consequently, if pancreatitis has already been caused, our chief concern after removing gallstones, if these are present, must be to provide a safety valve against any rise in bile pressure, and so avoid any further occasion for retroinjection of bile into the pancreas and aggravation of the lesion. Whereupon, we may trust Dame Nature to repair the damage already done in the pancreas!

But to repair such damage, consisting as it does frequently of multiple microscopic necroses with edema and possibly some hemorrhage, much time is necessary. I am inclined to place that time at three weeks at least, and if the pancreas is much affected, at two months or more.

2. Archibald, Edward: A New Factor in the Causation of Pancreatitis, Tr. Internat. Cong. Med., London, 1913; The Experimental Production of Pancreatitis, Paper read June 7, 1918, at Cincinnati Meeting of American Surgical Association.

One question will naturally occur to operators. If it is true that the sphincter of the common duct by its resistance may cause retroinjection of bile into the pancreas, and if the gallbladder is a sort of reservoir or safety valve protecting against sudden or extreme rises in bile pressure, why should not a cholecystectomy very quickly cause an increased pressure in the common duct, and so be followed more often than not by the entrance of bile into the pancreatic duct and by pancreatitis? From the work of Dr. Judd, we know that the contrary is the case. In his opinion, a cholecystectomy reduces ultimately the pressure in the common duct, and so conduces to the cure of pancreatitis.

I am sure Dr. Judd's conclusion must be correct, based as it is on a large and carefully collated experience. But I feel that the fact may be preferably explained otherwise. A short series of experiments on only three dogs, lately carried out with the object of measuring the pressure in the common duct before and after cholecystectomy, has shown that the pressure was not reduced in the common duct, at least inside of two months. By that I mean that the resisting power of Oddi's sphincter was found to be unaffected by the cholecystectomy. I think therefore that we must look for other reasons for the fact that pancreatitis is best cured by removal of the gallbladder. Here one is reduced to theorizing. I believe we must ascribe some effect to the postoperative care, especially the fluid diet at short intervals. We know that the arrival of food in the duodenum causes an opening of the sphincter and a flow of bile into the intestine. Therefore, two-hourly feedings would tend to prevent any accumulation of bile in the common duct. Jaboulay was able to cure a biliary fistula by the simple expedient of feeding his patient every two hours, day and night.

On the other hand, if I may be allowed to venture a hypothesis as yet unsupported by much evidence, I should be inclined to say that the removal of the gallbladder very possibly brings about a permanent diminution of bile pressure in the common duct, by virtue of removing the only muscular force of any power that is present in the biliary tract. While the bile pressure, as secreted in the liver, is not more than 150 mm. of water and often less, the gallbladder, as demonstrated by Freese of Johns Hopkins some years ago, possesses an expelling force amounting, if I remember rightly, to more than 200 mm. of water. This factor being removed by cholecystectomy, it is conceivable that with the very small and very elastic *vis a tergo* represented by bile secretion in the liver, the pressure in the common duct may rarely if ever rise to a point at which it may be forced into the pancreas against the slight pressure of the pancreatic secretion, before the sphincter relaxes at the call of food and the bile in the common duct flows harmlessly into the intestine.

If this were shown by experiment to be the case, it would very plausibly explain the good effects of cholecystectomy so regularly seen in the Mayo Clinic.

ABSTRACT OF DISCUSSION

DR. W. D. HAGGARD, Nashville, Tenn.: Dr. Archibald's study seems to confirm the general impression I have received in reference to drainage for pancreatitis. We should divide these cases into two groups: first, the cases in which there is infection of the gallbladder, in which it is essential to remove the galbladder; second, cases associated with stones

in the common duct, in which it is paramount to remove the stones; and when we drain we cure the patient. In the cholecystectomy cases Dr. Archibald goes a step farther and drains through the cystic duct. He cures three out of four patients. Remove the gallbladder whenever wise and safe in cases of chronic pancreatitis and drain.

Dr. E. Starr Judd, Rochester, Minn.: Our experimental work on pancreatitis was brought about entirely by the researches of Dr. Archibald years ago, and it may be at variance with his work at the present time. This work was entirely original so far as Dr. Archibald is concerned. We thought, as our experiments went along, that while they were a little different from Dr. Archibald's, that we were coming to the same conclusions. The assumption was that pancreatitis was due to bile entering the pancreatic duct, because of the action of the sphincter. Archibald proposed to cure pancreatitis by paralyzing Oddi's sphincter. Dr. W. J. Mayo called attention to the fact that clinical evidence shows that removal of the gallbladder is a good procedure, in gallbladder cases, when the pancreas is involved. I remember the first case illustrating this point. The original treatment for chronic pancreatitis was drainage of the gallbladder. It had been drained twice, and all symptoms were relieved, which was the history in most of our cases of pancreatitis that were drained. At the third operation the pancreas was definitely enlarged and there were many adhesions about the gallbladder. It was so badly lacerated that it was impossible to do a cholecystotomy so the gallbladder was removed. The man was watched carefully, with the idea that he might have trouble, that possibly we might have taken away a safety valve. However, he promptly got well and remained well.

Unless there is definite mechanical obstruction in the common duct cholecystenterostomy is useless. Permanent bile drainage cannot be established in that way. The reason we believe that cholecystectomy is a better procedure in pancreatitis is that in every case in which the gallbladder is removed, the common duct dilates until its increased capacity compensates for the loss of the gallbladder, or the sphincter becomes incontinent. This dilatation has been mentioned by many observers when there is obstruction of the duct. In the experimental work of removing the gallbladder, conducted by Dr. Mann, we found what we thought was a definite enlargement in the common duct, and as nearly as it could be estimated in a large percentage of the dogs and cats, a definite dilatation existed in this duct. We tried to estimate how this took place, and it seemed to be due to fluctuation in pressure. The resistance offered by the liver itself was greater than that offered by the walls of the extra hepatic ducts or the sphincter. We presume that this fluctuation in pressure eventually brought about what Dr. Archibald was doing in experimental work on the sphincter. It seemed that the dilatation in the duct continued until there was enough hypertrophy in the wall to overcome the resistance offered by the little sphincter in the ampulla. When that took place we had paralysis of the Oddi sphincter and a continuance of the entrance of bile into the duodenum. In this way we had an explanation of how removal of the gallbladder might possibly cure cases of pancreatitis.

Dr. J. Earl Else, Portland, Ore.: As has been stated, regurgitation of bile is a cause of pancreatitis. In a case seen at postmortem, Nature took care of a regurgitation of bile into the pancreas without leaving any evidence of inflammation although there was undoubtedly some present at one time. The outlet of the ampulla of Vater was almost completely occluded so that pressure on the gallbladder would force only a drop of bile at a time from it. The bile flowed freely from a persistent duct of Santorini. Dissection showed about 6 cm. of the lower portion of the duct of Wirsung to be dilated. From the upper end of the dilated portion a large anastomotic branch led over to the duct of Santorini so that the bile passed up the duct of Wirsung through the large anastomotic branch to the duct of Santorini and down through it to the duodenum. A search of the literature at hand failed to reveal a similar case.

Dr. R. C. Dugan, Ottawa, Kan.: Dr. William J. Mayo was the first surgeon I saw remove the mucous membrane of the gallbladder instead of removing the whole gallbladder. It was done as the operation of necessity because he could not remove the whole gallbladder. Recently, I have been doing that operation by election and I think I get better results in many cases than from a complete cholecystectomy. The pouch of peritoneum left after the removal of the mucous membrane of gallbladder gives opportunity to drain as long as we want to, and when drainage is removed, the gallbladder is practically removed as far as function is concerned.

Dr. Edward W. Archibald, Montreal, Canada: In cases of pancreatitis where there is infection and the gallbladder is removed and the common duct drained, it will be better to drain the common duct a long while rather than a short while. I have a profound admiration for the work that is going on in the Mayo Clinic; work which is not merely clinical, but is reaching out into the domain of experimental surgery. We must all regard such work as being nowadays a necessary complement to clinical work in any clinic of high standing. By it alone, we can get light on many problems. By comparing and discussing our results, as we have done today, we shall ultimately have complete knowledge of this subject.

FURTHER EXPERIENCES WITH THE KONDOLÉON OPERATION FOR ELEPHANTIASIS *

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I wish to discuss in this paper the merits of the Kondoléon operation for elephantiasis and to report the results obtained in seven patients operated on by the method.

Kondoléon[1] of Athens, Greece, in 1912, first reported cases of elephantiasis in which operation was performed by his method. The operation seems to have been gradually evolved through others of a similar though distinctly different type, which had been performed by Lanz,[2] Oppel[3] and Rosanow,[4] and its aim is to establish, by a wide excision of the aponeurosis, a communication between the superficial and deep lymphatic channels. The deep aponeurosis seems distinctly to separate the superficial from the deep group of lymphatics. In elephantiasis, the edematous and hypertrophied tissues are found to lie above the aponeurosis, while the subaponeurotic tissues are usually quite normal. When large pieces of this tissue are removed, sufficient communication may be established to allow the deeper group of lymphatics and the muscles to drain the stagnant lymph ordinarily handled by the blocked superficial group, and this very markedly benefits the condition. The technic of Kondoléon's operation is as follows:

Long incisions are made along the outer and inner aspects of the affected limb, and through each of these a large slice of edematous fat is removed. The aponeurosis is then opened and a portion of it, three or four fingers in width, is excised throughout the entire length of the skin incision. The wound is then

* From the Mayo Clinic.
* Read before the Section on Surgery, General and Abdominal, at the Sixty-Ninth Annual Session of the American Medical Association, Chicago, June, 1918.

1. Kondoléon, E.: Die chirurgische Behandlung der elefantiastischen Oedeme durch eine neue Methode der Lymphableitung, München. med. Wchnschr., 1912, **59**, 2726-2729; Die operative Behandlung der elefantiastischen Oedeme, Zentralbl. f. Chir., 1912, **39**, 1022-1025; Die Dauer-resultate der chirurgischen Behandlung der elefantiastischen Lymphödem, München. med. Wchnschr., 1915, **62**, 541-542.
2. Lanz: Eröffnung neuer Abfuhrwege bei Stauung in Bauch und unteren Extremitäten, Centralbl. f. Chir., 1911, **38**, 152-155.
3. Oppel, V. A.: Conservative Operative Treatment of Elephantiasis, Khirurg. Arkh. Velyaminova, St. Petersburg, 1911, **27**, 387-394.
4. Rosanow, W. N.: Lymphangioplastik bei Elefantiasis, Arch. f. klin. Chir., 1912, **99**, 645-655.

closed without drainage in such a way that the skin, with a small amount of subcutaneous fat attached to it, comes in contact with the exposed muscles.

The first article in this country calling attention to and commending this operation was published in 1913 by Matas[5] of New Orleans. He discusses in detail the etiologic factors that contribute to the production of true elephantiasis, giving his own opinion and that of others regarding the part which bacteria, usually streptococci, play in the production of this condition, and emphasizing repeatedly the necessity of such bacterial invasion in order that a true elephantiasis may be produced. Lymphatic or venous stasis, from various causes, usually precedes and is the predisposing cause of the bacterial invasion, although, according to Matas, many writers, including Le Dantec,[6] Sabouraud[6] and Unna,[6] believe that true elephantiasis may occur independently of lymphatic or venous obstruction and solely as a result of repeated attacks of streptococcic infection. Matas states that the histopathologic elements that are essential to complete the picture of elephantiasis are (1) a mechanical obstruction or blockade of the veins and lymphatics of the affected region, usually an obliterative thrombophlebitis or lymphangitis or adenitis; (2) hyperplasia of the collagenous connective tissue of the hypoderm; (3) gradual disappearance of the elastic fibers of the skin; (4) the existence of a coagulable dropsy or hard lymphedema, and (5) a chronic reticular lymphangitis caused by secondary and repeated invasion of pathogenic micro-organisms of the streptococcic type. In conclusion he reports two cases in which operation was performed, one by himself and the other by his associate, Gessner, which were the first cases in this country in which the Kondoléon operation was used.

Royster,[7] early in 1914, reported a case in which operation was performed by Kondoléon's method, and Hill,[8] in 1915, reported a case in which the same procedure had been used.

The operation has been performed in the Mayo Clinic in seven instances. I have reported three of these cases in a recent article on the subject. In three of the patients the disease was located in the left arm, and in the other four patients, in one of the lower extremities.

In the first arm case an elephantiasis had developed following an infected vaccination wound, with repeated erysipelatous attacks in the affected arm. The next arm case in which operation was performed was one of a simple lymphedema of the arm following the radical removal elsewhere of the left breast and axillary glands for a supposed malignant tumor of the breast, but which was afterwards proved to be benign. In the third arm case, an elephantoid condition had resulted from an injury to the arm two years previously.

Fig. 1.—Line of incision on the outer surface of the leg and thigh.

Fig. 2.—Line of incision on the inner surface of the leg and thigh.

5. Matas, Rudolph: The Surgical Treatment of Elephantiasis and Elephantoid States Dependent upon Chronic Obstruction of the Lymphatic and Venous Channels, Am. Jour. Trop. Dis. and Prev. Med., 1913, **2**, 60-85.
6. Quoted by Matas (Note 5).
7. Royster, H. A.: Elephantiasis and the Kondoléon Operation, THE JOURNAL A. M. A., May 30, 1914, p. 1720-1722.
8. Hill, L. L.: Elephantiasis, Surg., Gynec. and Obst., 1915, **21**, 334-335.

In one of the leg cases, a woman aged 23, the condition was probably congenital, having been first noticed when the patient was a child 1½ years old. In another case of a girl, aged 17 years, who had had trouble for six years, no etiologic factor was obtainable. Her tonsils were septic, and were removed following the operation. The third leg case in which operation was performed was that of a child with a chronic tuberculosis synovitis of the knee and tuberculosis of the inguinal lymph nodes on the affected side. The fourth case was in a woman of 21. The condition had developed six years previously, following an attack of tonsillitis, with subsequent arthritis which was accompanied by fever. At the same time she also had four large boils on her face and right arm.

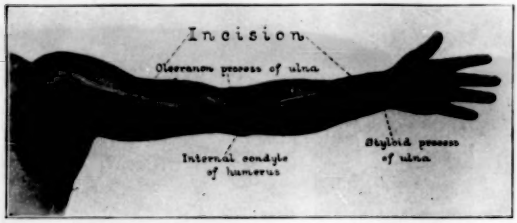


Fig. 3.—Line of incision on the outer surface of the arm and forearm.

In all of the leg cases there was marked thickening of the dermal and hypodermal tissues with marked edema and thickening of the aponeurosis, but in none of these could a history of recurring erysipelatous attacks be obtained.

The results obtained in the arm cases were not so satisfactory as those in the leg cases. In each case improvement was quite marked shortly after the operation, but in two instances the patients still report some swelling which fluctuates in its extent. In the patient in whom the trouble had developed following vaccination, the arm and forearm have returned to normal, but a swelling of a fluctuating type still persists on the dorsal surface of the hand.

In all of the leg cases the improvement was very striking and occurred almost immediately following operation. In the first of these, operation was performed one and one-half years ago (previous to June, 1918), and the others eight months, four months and two months ago, respectively. All were heard from or seen during April or May, 1918, and in each case the improvement has been very marked and has persisted.

We were able to grow streptococci from the verrucose formations which were present in certain areas on the arm of the patient who developed elephantiasis following infection in the vaccination wound. However, although cultures were made from the edematous fat and thickened aponeurosis in nearly all of the other cases in which operation was performed, streptococci or other pathogenic organisms could not be grown. In the first patients operated on, no microscopic examinations were made of the tissues removed. In the later cases, however, careful examinations of these were made with the same findings as those reported by other writers. Dr. Broders, of the laboratory of fresh tissue diagnosis, has very kindly done this portion of the work and reports his findings as follows:

EXAMINATION OF TISSUES

Gross Pathology.—Grossly, the specimens examined presented a reduction in the thickness of the epidermis with a marked thickening of the dermis. A large amount of fat was present underneath the dermis, which was separated into lobules by fibrous connective tissue trabeculae. These trabeculae connected with the aponeurosis, which was also greatly thickened.

Microscopic Appearance of the Tissues.—Microscopically, there was a reduction in the thickness of the epidermis. The epithelial papillae were very much diminished in length and, in a number of areas, they had completely disappeared. The dermis showed a marked thickening and fibrosis. The sweat glands were partially compressed by the excess of fibrous tissue, while the veins and lymphatics were dilated. The elastic tissue of the skin had entirely disappeared. The fibrous trabeculae which separate the fat lobules and connect with the aponeurosis showed numerous dilated veins, capillaries and lymphatics, and also small groups of leukocytes. The aponeurosis presented a picture similar to that of the trabeculae. There were evidences of edema throughout the tissue.

TECHNIC OF OPERATION

In our first cases we followed as closely as possible the technic, as we understood it, which had been used by Kondoléon. We gradually realized that better results were obtained when a fair amount of hypertrophied skin was removed in addition to an extensive removal of the edematous fat, and that it was necessary, in order to obtain the best results, to remove, as Kondoléon has emphasized, a wide strip of aponeurosis. Since we have practiced the removal of the skin we have changed slightly our method of procedure, although we achieve, in the end, results identical, except for a wider removal of skin and fascia, with those obtained in our first cases. At present, we perform the operation as follows:

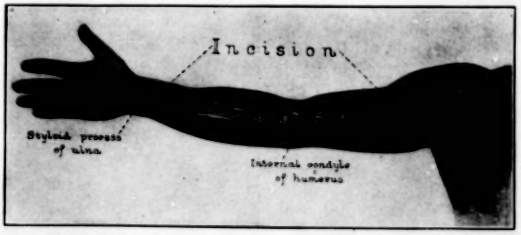


Fig. 4.—Line of incision on the inner surface of the arm and forearm.

A long modified elliptic incision, which includes the skin to be sacrificed, is made on one side of the affected limb. On the outer aspect of one of the lower extremities this incision would extend from the trochanter to the external malleolus. Then, in order

to facilitate a wide removal of the subcutaneous fat, the skin is reflected on each side of the incision for a distance of about 1 or 1½ inches. The skin is retracted, and underneath each of the reflected skin edges, a long incision is made through the edematous subcutaneous fat down to and including the aponeurosis. These incisions are made almost parallel to the original skin incision. Included between them is a quadrilateral piece of edematous fat and aponeurosis. At the upper end, these two incisions through the aponeurosis are connected by a transverse incision. The tissues to be removed are now free except for the attachment of

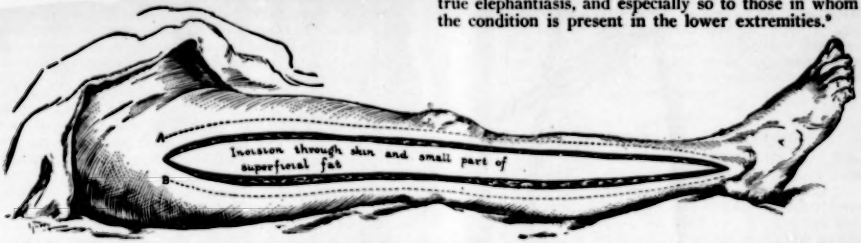


Fig. 5.—Incision used on the outer surface of the thigh and leg. Dotted lines *A* and *B* show extent to which the skin is reflected for the removal of subcutaneous fat.

the aponeurosis to the underlying muscles. By traction on the tissues that are to be removed, it is very easy to dissect the aponeurosis from the muscle throughout the length of the entire limb and to remove in one long piece the skin, edematous fat and aponeurosis. A number of vessels which tend to bleed profusely are encountered. These are temporarily controlled with forceps. After the tissue has been removed, these forceps are taken off, and surprisingly few of the vessels will be found to need ligatures. The wound is closed with interrupted silkworm-gut stitches, without drainage. It is necessary to do a similar operation on the opposite side of the limb. If the patient's condition permits, we usually do this as soon as the first operation has been completed; if not, after a period of eight or ten days has passed. The tissues, although diseased, heal remarkably well, and in none of the cases in which we have operated has there been the slightest infection (Figs. 1-7).

After operation, the patient is kept in bed for eight or ten days. An elastic bandage is then applied and the patient allowed to get up and walk about. We have advised the use of this elastic bandage for several months, and if there is a tendency toward swelling when it is removed, it should be worn for an indefinite period. The suggestion of Matas, to administer antistreptococcic serum or vaccine at intervals for some time after the operation, has been followed.

Our experience with the Kondoléon operation leads us to believe that in this we have a procedure whereby much aid can be offered to patients suffering with a true elephantiasis, and especially so to those in whom the condition is present in the lower extremities.[9]

REPORT OF CASES

CASE 1 (41167).—A woman, aged 21, with the congenital type of elephantiasis of the left leg, which had been present since she was 1½ years of age, was first seen in the Mayo clinic at the age of 15. At that time there was a tremendous enlargement of the left foot, leg and thigh, and a marked thickening of the skin covering these. In August, 1911, according to Handly's method, one silk strand was placed on the outer and one on the inner aspect of the leg, from the ankle to the region of the left groin. The patient returned six months later without improvement; in fact, the enlargement had increased. In February, 1912, a double silk strand was placed subcutaneously on the outer and inner aspects of the leg, and the inner of these strands was extended upward into the fat of the abdominal wall, while the outer strands were carried as high as the left axillary line. The condition remained unchanged until her return more than four years later. At this time, December, 1916, an operation of the Kondoléon type was done, first on the outer side of the leg,

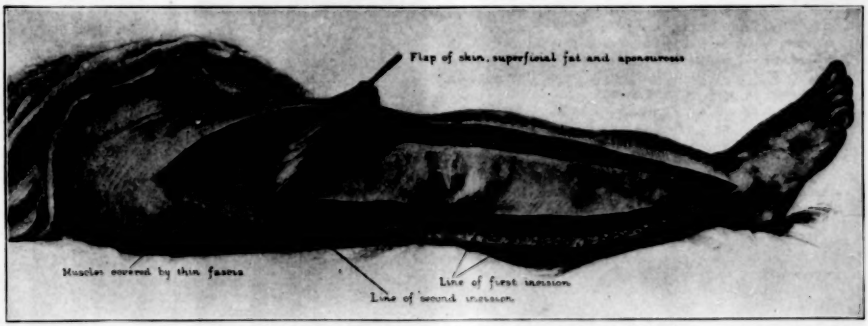

Flap of skin, superficial fat and aponeurosis
Muscles covered by thin fascia
Line of first incision
Line of second incision

Fig. 6.—Skin, a large amount of subcutaneous fat, and aponeurosis removed in one piece.

9. Elliott, J. A.: Elephantiasis Nostras: Report of a Case, Jour. Cutan. Dis., 1917, **35**, 17-25.

and about one month later, on the inner side. The improvement was marked from the beginning, and at the time of her discharge, in March, 1917, the leg was much smaller than before the operation. A letter received in May, 1918, stated that the leg at present was smaller than when she left here,

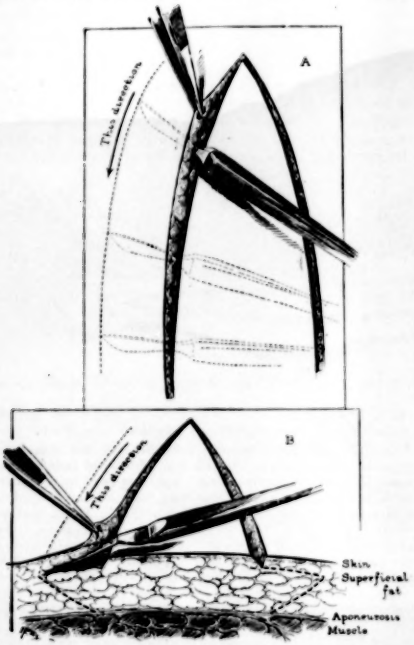


Fig. 7.—A, method used to facilitate the removal of a large amount of subcutaneous fat. After the incision has been made the skin and a small amount of fat are reflected in order that a larger amount of fat may be removed. *B*, cross-section of *A*.

and that she was able to walk and even to run with but slight inconvenience.

CASE 2 (170799)—A woman, aged 20, with elephantiasis nostras, presented a history that was negative until she was 11 years of age, when there was a severe infection following vaccination on the left arm. After the vaccination wound healed she was in good condition until two years before coming to the clinic. At this time, swelling of the left hand had developed and had slowly progressed until the forearm and arm were involved in the process. She had had many attacks of erythema in the swollen portion. The history and findings in this case have been reported in detail by Elliott. At the time of our examination, July 9, 1917, the patient presented a diffuse swelling of the arm, forearm and hand. The swelling was much more marked in the hand and gradually diminished up to a point a few inches below the acromion process. It also involved the proximal phalanges of the fingers. There was a definite thickening of the skin. July 13, an operation of the Kondoléon type was performed through incisions 5 or 6 inches long on the anterior and posterior surfaces of the arm and forearm. No incisions were made on the hand. Considerable improvement followed in the arm and forearm, but the condition in the hand remained stationary and some swelling also remained about the elbow. A second operation was done, September 29, at which time two incisions were made on the dorsal surface of the hand and one on each of the lateral surfaces of the elbow. Multiple incisions were also made on each proximal phalanx of the fingers. The arm and forearm have returned practically to normal. Following the second operation there was considerable improvement for a while in the hand; later, however, the dorsal surface of the hand had a return of the swelling and at the present time (June, 1918) it is swollen.

CASE 3 (206558)—A woman, aged 51, had lymphedema of the left arm following amputation of the breast with removal of the axillary glands, done elsewhere. The wound had not been infected. Two months after the operation the arm began to swell, growing slowly but progressively worse and involving the dorsal surface of the hand, the forearm and the arm nearly as high as the shoulder joint. There was no thickening of the skin. Sept. 1, 1917, a Kondoléon type of operation was done. Long incisions were made on the outer and inner aspects of the arm and forearm from a point a few inches below the shoulder joint down to the wrist; also two incisions were made on the posterior surface of the hand. The swelling in the hand decreased at once, and there was marked improvement in the arm and forearm for a time. A recent letter (May, 1918), would lead us to infer that there is slightly more swelling at this time than there was when she was discharged from our care. This, however, is of a fluctuating character, and is less at times.

CASE 4 (216446)—A woman, aged 43, with an elephantoid condition of the left forearm, had a fall down stair-steps two years before being seen in the clinic, with injury to the left forearm. Three days later the skin on the outer surface of the forearm became red and then black, and remained so for two or three weeks. Three months later the forearm swelled and remained so until she was examined here in January, 1918. At times there was also swelling on the dorsal surface of the hand. When seen, the patient was found to have a

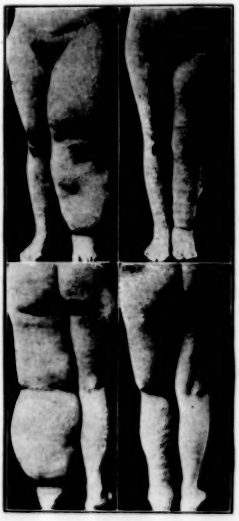


Fig. 8 (Case 1).—Anterior and posterior views before and after operation.

Fig. 9 (Case 6).—Anterior and posterior views before and after operation.

swelling of the left forearm, with considerable thickening of the skin. January 12, an operation of the Kondoléon type, similar to the one described in the previous cases, except for the fact that no incisions were made on the dorsal surface of the hand, was done. There was marked immediate improve-

ment which persisted until April 1. The patient, in a recent letter, states that at this time the forearm from the elbow to the wrist became inflamed and full of red blotches. Following this the swelling returned and at the present time (June, 1918), the arm has been swollen for two months. She states that the swelling is nearly as marked now as before the operation.

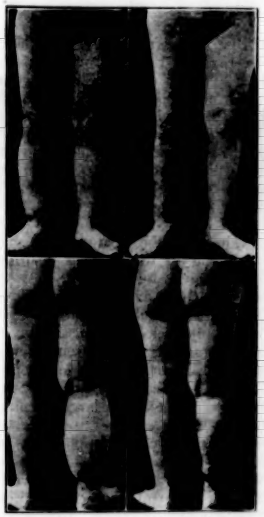


Fig. 10 (Case 5).—Anterior and posterior views before and after operation.

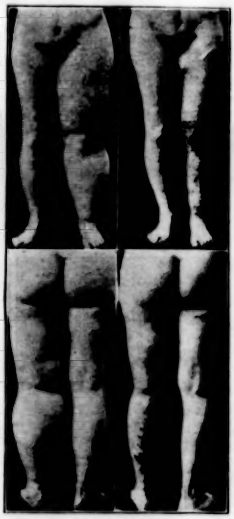


Fig. 11 (Case 7).—Anterior and posterior views before and after operation.

CASE 5 (213799)—A girl, aged 17, had a negative history until 1912. At that time the right leg became swollen without apparent cause and remained so until she was seen here in November, 1917. No etiologic factor could be obtained. The patient had septic tonsils, which were removed after her operation. When examined, there was a very marked enlargement of the right leg and thigh, with thickening of the skin. An operation of the Kondoléon type was done, Nov. 27, 1917. It was followed by marked improvement which has been permanent to the present time (June, 1918).

CASE 6 (221137).—A girl, aged 12, when 3½ years of age developed swelling on the inside of the right knee, which was followed by a swelling of the leg and thigh. The condition began one month after an attack of measles. She consulted us in February, 1918, at which time there was fairly marked swelling of the leg and thigh, with considerable thickening of the skin. She also had a tuberculous synovitis of the right knee joint, with slight effusion into the joint, and a tuberculosis of the right inguinal glands. A Kondoléon operation was done, Feb. 12, 1918. This was followed by a very fair decrease in the size of the limb, which has remained stationary to the present time (June, 1918). The result following the operation in this patient was not quite so good as that obtained in the other patients in whom the condition was present in the leg.

Fig. 12 (Case 2).—Three months after Kondoléon operation. Unfortunately, no photograph was taken in this case before the operation.

Fig. 13 (Case 3.)—Arm before operation and two and one-half months after operation.

CASE 7 (228071)—A woman, aged 21, five and one-half years before she was seen in the Mayo clinic, in 1918, developed tonsillitis which was followed by an arthritis with fever. At the same time there were several large boils on her face and right arm. Two and one-half years later the patient developed an amenorrhea, and during six weeks' time lost 30 pounds in weight. She was then told by her physician that she was anemic. The swelling in the right leg continued up to the date of her visit to this clinic, when there was a marked edema of the right leg with considerable thickening of the skin. A Kondoléon operation was done on one side of the limb, April 20, and on the other side, April 30, 1918. It was followed by immediate and very marked improvement which has continued up to the present time (two months). In this instance the limb returned practically to a normal state.

ABSTRACT OF DISCUSSION

DR. HUBERT A. ROYSTER, Raleigh, N. C.: Elephantiasis is not a very common disease, at least not in this country. We have been taught heretofore that the disease was caused by the *Filaria sanguinis-hominis*, or some of the parasites circulating in the blood. I venture to say that unless one has looked up this subject within the last year or so, that opinion would still be held by the majority of physicians. As a matter of fact, as shown by Matas, cases in the southern part of this country rarely exhibit filariae. The case which I had was the only case of true elephantiasis that I have seen and it did not show the *Filaria sanguinis-hominis* in the blood either by day or by night. This patient was operated on in January, 1914, by the method just described, the Kondoléon operation. Fortunately, I had just received and read carefully the exhaustive paper by Dr. Matas and I was able to give this man almost perfect relief; whereas experience by different surgeons with other cases had ended in sad failures. I do not wish to discuss this operation in detail, because Dr. Sistrunk has given practically all that is known about it at the present time. I wish, however, to emphasize the principle that he established, as suggested by Kondoléon, that in this operation is produced an anastomosis or communication between the superficial and deep lymphatics by removing the barrier between them. This principle is a practical one, for in the cases in which it has been done, the result has worked out either for great improvement or almost perfect recovery. My patient was a colored man who had been living in Florida recently. The history extended over seven years, with recurring attacks

of local inflammation resembling erysipelas. This again goes to show that in most of these cases there is an infection by the streptococcus of one type or another and during the period of the disease are exhibited, from time to time, recurring phases of this infection more or less acute. But very few observers have been able to prove the existence of the streptococcus in the tissues removed. My case was a typical Barbados leg and affected the limb only, from the knee down. There was a peculiar mass very horny, almost calcareous above the great toe. The bleeding at operation is usually quite free, and has to be controlled by hot packing and some ligatures. This case finally resulted in my having to operate on the foot in the same way three months afterward, and now the man's leg is practically well and he can perform his duties as a cook in a lumber camp.

DR. H. B. GESSNER, New Orleans: Dr. Sistrunk is to be congratulated on his excellent results and on his development of the technic. In regard to the etiology, there is no question about the importance of infection in producing these cases. As to the *Filaria sanguinis-hominis*, it must be extremely rare in this country. There is a tradition in New Orleans of a case in the Charity Hospital many years ago in which somebody found the *Filaria sanguinis-hominis;* the story is told how the investigator used to get up at midnight to take the blood and find the filariae dancing around. I have never known a case produced by filariae.

In addition to the one referred to by Dr. Sistrunk, I have had two other cases. In one of my cases the leg alone was involved, in another the forearm, in another the leg and thigh throughout their entire extent. In each of these cases there was a history of fascial and subcutaneous infection, not of an erysipelatous character. But I have seen a case in a middle aged woman in whom quite a considerable elephantiasis was traced to repeated attacks of erysipelas. The case in the forearm began in a finger infection. All of my patients were much improved, but none were cured entirely.

Dr. Matas has had half a dozen cases. In one the return to normal was almost complete.

Just a last word about the technic. We have not modified the technic, but our custom is to make a long incision on each side of the limb, through which the deep fascia is taken out quite extensively. I should estimate that in a leg we would probably take out half of the circumference of the deep fascia.

DR. H. R. DECKER, Pittsburgh: Is an effort made to spare the internal saphenous vein by a median incision?

DR. WALTER E. SISTRUNK, Rochester, Minn.: In answer to the question regarding the saphenous vein, we sacrifice that in removing the aponeurosis covering the muscles. It is along the line of incision and is deliberately cut with no bad results.

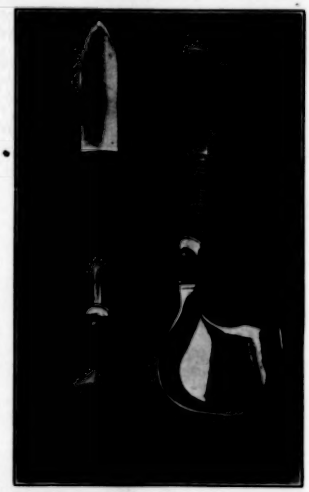
Cause of Leukemia.—The *Nederlandsch Tijdschrift* summarizes an article by Wiczkowski in the *Przeglad Lekarski* relating that he succeeded in inducing a disease in a hen, resembling in some respects human leukemia, by intravenous injection of pleural effusion from a young man who had developed acute leukemia after a trauma. The leukocytes numbered 590,000 and there was pleurisy on one side. In the hen the hemoglobin dropped from 55 to 9 per cent. and the bone marrow showed infiltrates, etc. The clinical picture differed completely from that with so-called fowl leukemia.

TREATMENT OF VERNAL CONJUNCTIVITIS WITH RADIUM

TECHNIC

WILLIAM ALLEN PUSEY, M.D.
CHICAGO

In the course of the last fifteen years, I have treated with roentgen rays or radium several cases of vernal conjunctivitis. The results with either agent seem to be the same, and the application of the radium to the inner surface of the eyelids is so much less difficult than that of roentgen rays that in the last few years I have used only radium. I have had a great many requests for the technic of using radium in these cases. For that reason, I believe it may be interesting to describe the technic that I have found successful in my cases.



Lid forceps.

The lid to be treated is everted and held in the everted position by clamping lightly with lid forceps, such as are illustrated herewith. The blade next to the eye is of solid heavy metal, so that it prevents the eye itself being reached by an appreciable amount of rays. The outer blade consists of a rim with a large opening which leaves exposed the area of conjunctiva for the application of the radium. I have used in these cases a flat radium applicator containing in varnish 5 mg. of radium element. This applicator is of sufficient strength to produce a bright erythema on normal skin by an application of ten minutes through thin rubber cloth.

In order to avoid discomfort, I do not make any pressure in applying the radium to the lid, but pass it back and forth over the lid just short of the point of contact with the surface. I have estimated that in an application applied to the whole papebral conjunctiva with the applicator moving about, each part of the surface of the conjunctiva gets an exposure of one-third the total application; that is, with an application of thirty minutes, the applicator being moved back and forth, each part of the lid gets an exposure of ten minutes. I have preferred to make the application in broken doses. I make an application of five minutes' duration over the whole lid for six successive days, so that in the course of a week the conjunctiva gets thirty minutes of a moving exposure, each part of the lid thus getting ten minutes. This exposure with my applicator has not proved sufficient to give any evidence of roentgen-ray reaction. After such treatment, the patient is usually allowed an interval of several months, depending on the condition of the conjunctivitis. Usually the first series of treatments is followed by distinct improvement. In one successful case, I gave four series of such exposures in the course of a year without at any time producing an apparent radium reaction in the case, but obtaining a completely successful symptomatic result.

The number of cases treated is not sufficient to warrant any dogmatic statements, but all have been cases of severe vernal conjunctivitis, with papillomatous thickening of the conjunctiva, with characteristic grayish pellicle, and with extreme photophobia. They have been of many years' duration, have resisted skilful treatment before, and in the cases in which I have been able to carry the treatment along as far as I have thought necessary, the results have been successful to a noteworthy degree. Some cases have shown symptomatic curves that have now persisted for several years. The results, indeed, have been so gratifying in these otherwise entirely intractable cases, and the treatment is so easy, that the method, I believe, is worthy of wider application than it has received.

7 West Madison Street.

CLINICAL OBSERVATIONS OF CONGENITAL PYLORIC STENOSIS *

REPORT OF OPERATIONS IN 101 CASES

ALFRED A. STRAUSS, M.D.
CHICAGO

In considering congenital pyloric stenosis from the standpoint of clinical observation, I shall endeavor to emphasize some new facts regarding the diagnosis, etiology and operative procedure. Our results and opinions are gained from the observation of 101 cases sent to the clinics of Drs. Abt, Hess, Lackner, Jampolis and Michaels, of which sixty-five were treated surgically and thirty-six medically. In this series, we had three deaths following surgical procedure. In the first thirty-four cases in which operation was performed there was but one death. A child was brought to the hospital in a moribund condition, pulseless, cyanotic, with impetigo infection over its entire body. Dr. Abt advised against operation because the child was in a dying condition. In spite of this fact I operated.

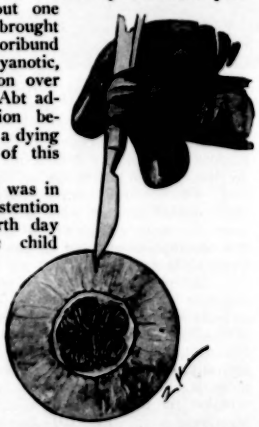


Fig. 1.—Transverse section showing sharp end of scalpel used to divide only superficial layers of muscle tumor.

The second fatality was in a case in which distention occurred on the fourth day after operation, the child dying on the sixth day. Necropsy revealed a partial intestinal atresia with obstruction due to this anomaly at the ileocecal valve.

The third death occurred on the eighth day after operation. The child seemed perfectly well, taking nourishment regularly, when it suddenly became cyanotic, and hemorrhages from the lung occurred. Necropsy revealed a pulmonary embolism.

The sixty-five cases in which operations were performed were not selected cases, operation being refused in no case. Twenty-four of the patients were in a moribund condition, markedly emaciated, with very feeble radial pulse. Five patients weighed less than 5 pounds each, and two weighed less than 4½ pounds. Four were in such a state of decomposition that a semicomatose condition was present.

Fig. 2.—Breaking through muscle tumor to mucosa with handle of scalpel.

METHOD OF OPERATION

The method of operation was a pyloroplasty which I devised experimentally in 1913 and 1914.[1] I was stimulated to this experimental work by Dr. Abt, who insisted that gastro-enterostomy, on account of its high mortality, was not the proper operation for this condition. I performed my first operation on a human being in January, 1915, and this series dates from that time until June, 1918.

The pyloroplasty has as its underlying basis the object of reconstructing the pathologic form of pylorus into a normal one. The pyloric tumor shows on cross-section that it has, first, an infolding of its mucosa, and, secondly, a tumor composed of normal hypertrophied smooth muscle. In order to reconstruct this pylorus to the normal we must first unfold the infolding mucosa, which is done by shelling it out, and secondly reduce the muscle tumor, by using it as a plastic flap.

The operation when first devised required about thirty minutes. Since that time I have simplified the technic to such an extent that I do practically all cases within fifteen minutes or less.

The first important fact that I brought out three years ago was that this operation can be performed through an incision from three-fourths inch to 1 inch in length. This will admit the index finger and permit palpation of the pyloric tumor. A small, fine, ribbon-shaped hook is then passed along the index finger to the tumor, which is drawn out by means of the hook. This does away with handling or exposing any portion of the stomach except the pyloric end. On examining the pyloric region one can readily see the intermittent peristaltic contractions of the tumor, independent of any of the contractions of the stomach. As the tumor contracts it becomes white and cartilage-like, and as it relaxes it becomes pink and soft. This, I believe, bears an important relation to the etiology of the condition.

An incision is now made over the more bloodless portion of the tumor, which is usually the upper outer quadrant, starting well up on the normal side of the stomach and carrying it down almost to the duodenal end of the tumor. This incision is made with the

* From the Michael Reese Hospital.
* Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Sixty-Ninth Annual Session of the American Medical Association, Chicago, June, 1918.

1. Strauss, A. A.: New Methods of Pyloroplasty for Congenital Pyloric Stenosis, THE JOURNAL A. M. A., Oct. 30, 1915, p. 1533.

sharp end of the scalpel, going through only the superficial layers (Fig. 1). The rest of the tumor is now split with the handle of the scalpel on the stomach end of the tumor where it converges into the normal stomach musculature (Fig. 2). By breaking through to the mucosa at this point with the handle of the scalpel, the line of cleavage is very easily obtained, and then without any trouble the tumor can be split down to the duodenal end without the slightest danger of puncturing the mucosa. It is absolutely wrong to try to divide the tumor with a sharp scalpel down to the mucosa. This accounts for many deaths due to perforation of the mucosa when the Rammstedt operation is performed. By getting the line of cleavage of the mucosa near the stomach end of the tumor, the mucosa can easily be shelled out from the tumor. This unfolds the infolded mucosa (Fig. 3) and separates Meissner's from Auerbach's plexus, which is the first abnormal condition relieved. The second step is to utilize the hypertrophied muscle tumor. This is accomplished by simply splitting the inner portion and using it as a flap (Fig. 4). These flaps are brought out and sutured over the shelled-out mucosa, and thus the pathologic pylorus is reconstructed into a normal one (Fig. 5).

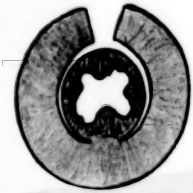


Fig. 3.—Mucosa shelled out from muscle tumor.

The free end of the attached omentum is now sutured with a few interrupted stitches with fine black silk over the operated area so as to cover the raw surfaces. This prevents leakage and hemorrhage, at the same time giving a new blood supply to the split muscle flaps.

ADVANTAGES OF THE OPERATION

This operation has many advantages over the Rammstedt, the principal one being the reduction of the mortality from 30 per cent. in the Rammstedt to less than 4 per cent. Downes, the chief advocate of the Rammstedt operation, has a mortality ranging from 24 to 26 per cent. This high mortality is due to two important factors: either incomplete division of the muscle tumor, of which both Downes and Lewisohn report cases, or puncturing of the mucosa when trying to divide these fibers near or at the duodenal end.

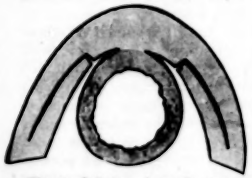


Fig. 4.—Splitting of muscle to produce flaps.

The second great advantage of my operation is that it affords immediate and complete relief. In the Rammstedt the mucosa is not shelled out. As a consequence there is vomiting for a few days which may be sufficient to cause death. By shelling out the mucosa, a free passage for food is immediately established, there is no vomiting and the child rapidly improves. This is undoubtedly an important factor in the lessened mortality rate.

In babies of 3 or 4 weeks the tumor is much smaller than in the older patients. In these patients the Rammstedt operation produces practically complete relief, while in the 7 to 12 weeks old babies the tumor is large and the Rammstedt operation in many instances is not sufficient unless the mucosa is shelled out. We have noted in dissecting out the tumor in these sixty-five cases that the size is in direct proportion to the age of the patient. In other words, we always find a small tumor, or only slight hypertrophy, in a 3 or 4 weeks old baby and always a large tumor in a 7 to 12 weeks old baby. There has been no exception to this rule. I believe, as I shall show later, that this bears an important relationship to the etiology of this condition.

In 30 per cent. of these cases the tumor is more or less one sided. Three fourths of the hypertrophy is on the outer two thirds of the pylorus, while the inner third is small and concave. When operating on these patients a single flap of the tumor suffices.

In the postoperative care, hypodermoclysis has been resorted to on only one occasion. In this case we were unable to feel pulsation at the wrist either before or after operation; the child was not able to swallow and was fed by catheter immediately after operation, from 1 to 1½ ounces of mother's milk being given every three hours. Within twelve hours we obtained a radial pulse, and the child made an uneventful recovery.

In the usual type of case, 1 ounce of physiologic sodium chlorid solution is given by rectum every three hours. As soon as the child is awake it is fed 1 dram of mother's milk every two hours and 1 dram of water in the interval. This is increased so that within twelve hours the patient receives one-half ounce every two hours. Within from thirty-six to forty-eight hours, an ounce is given every two hours; at the end of seventy-two hours, the child is put to the mother's breast.

Fig. 5.—Flaps brought into position for suture.

In only six cases out of sixty-five have we seen any vomiting, and in these cases it was only a slight regurgitation. This, I believe, is due to the fact that the mucosa is completely shelled out and the tumor reduced so that there is practically no resistance at the pyloric end. The vomiting which occurs following the Rammstedt operation I am sure is due to the fact that the muscular contractions of the stomach have to enlarge the incomplete opening in the pylorus, which offers more or less resistance.

DIAGNOSIS

Regarding the diagnosis of this condition, I wish to state that the fluoroscopic examination is the most important means of making an accurate diagnosis. It not only shows whether or not the case is one of pyloric stenosis, but classifies the case immediately as to whether the patient should receive medical or surgical treatment. In the 101 cases in which we have employed fluoroscopy, sixty-five were classified as surgical, and in each instance a tumor was found at operation. Of the remaining thirty-six, which we classified as medical, not one has required surgical procedure, showing the absolute exactness of this method.

The reason many men, for example, Grulee, Lewis, Hall and Holt, have stated that the roentgenographic examination is of very little value is that they have depended entirely on the roentgenograms instead of

the fluoroscopic examination, and the method of taking the roentgenograms was faulty. Practically all the roentgenograms that have been shown were taken with the baby flat on its back. This allowed the bismuth in the dilated stomach to accumulate on the left side of the vertebrae, and no peristaltic waves were stimulated in the pyloric region.

The technic which I will describe for fluoroscopic examination has been developed by Dr. Ahrens, the roentgenologist at Michael Reese Hospital, who examined all cases with me. The baby does not have to be undressed for this examination. A small amount of bismuth is added to mothers's milk and the child is placed under a horizontal fluoroscope. It is allowed to nurse from the bottle while we watch the passage of the bismuth milk through the esophagus into the stomach. If the child is permitted to lie flat on its back, the bismuth milk gathers on the left side of the vertebrae as a large, round mass and will lie there indefinitely. If the baby is rotated toward the right side, almost on its abdomen, we will see the bismuth gradually gravitate toward the pyloric end of the stomach, and one notices immediate peristaltic waves in the pyloric antrum and pylorus. A small amount of bismuth is now squirted through, and then the pylorus clamps down tightly. Immediately peculiar and characteristic, snakelike, rhythmic, peristaltic contractions can be seen in the pylorus which are independent of the rest of the stomach. This is absolutely pathognomonic of this condition. The flouroscopic examination consumes only about two or three minutes at this time. At the end of two hours the examination is repeated to see if anything has passed through, but as a rule the same picture is observed. At the end of four hours the child is again examined, for the last time. At the two later examinations roentgenograms are taken. In some cases we have observed retroperistalsis in the body of the stomach and a dilated esophagus, which is probably due to the retroperistalsis.

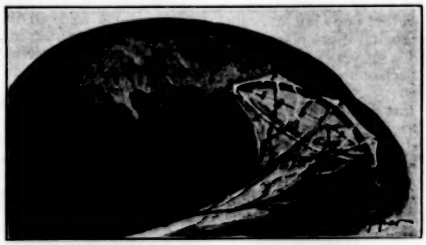


Fig. 6.—Flaps sutured and free ends of attached omentum over area of operation.

The important fact that we have established in these examinations is that the contractions of the pyloric antrum and pylorus are absolutely characteristic. We have standardized the emptying time so that any case in which one half or more of the bismuth milk remains at the end of four hours is recognized as a case of pyloric stenosis, and surgical interference is indicated. The cases in which 70 per cent. or more of the bismuth milk has passed through the pylorus at the end of four hours can, as a rule, be cured medically.

I believe that this simple method of fluoroscopic examination produces no shock, gives an immediate indication as to proper treatment, and is an ideal method of arriving at definite conclusions. It surely is much more accurate than aspiration of the stomach contents from time to time, as suggested by Holt. The stomach tube frequently curls up in the cardiac end of the stomach and nothing is aspirated, even though a large amount of the contents remains in the stomach, and it cannot be denied that the frequent passage of the tube has a markedly bad effect on these moribund infants.

In sixteen of the thirty-six cases treated medically in which we saw peristaltic waves on the abdomen clinically, fluoroscopic examination showed that the emptying time was normal. The peristalsis would start up high on the stomach and force the food through the pylorus in a more or less normal manner. In these cases a similar hyperperistalsis could be noticed in the entire intestinal tract. In other words, we were dealing with cases of hypermotility of the entire gastro-intestinal tract.

In the remaining twenty cases treated medically, three fourths of the bismuth had passed through at the end of four hours, although the characteristic, rhythmic, snakelike contractions of the pylorus were noted. Because of this fact, medical treatment was decided on, and all of these patients were cured without operation.

In three of the cases in which operation was performed there was preoperative vomiting, not of projectile character, and absolutely no peristaltic waves could be seen on the abdomen. Fluoroscopic examination, however, revealed the characteristic, rhythmic, snakelike contractions of the pylorus and almost complete obstruction, and at operation a tumor was found in each case.

The palpation of a tumor is a matter of personal equation. The tumor can be best felt while the child is asleep or nursing. We have paid very little attention to the palpation of the tumor since we have worked out our flouroscopic and roentgenographic technic.

To sum up, the diagnosis is made, first, by the large, characteristic peristaltic waves; second, the fluoroscopic examination; third, the projectile vomiting; fourth, the emaciation; fifth, constipation, and sixth, palpation of the tumor.

ETIOLOGY

A great deal has been written on the etiology of this condition, and many hypotheses have been formulated. Since operating on these sixty-five patients I have come to some fairly definite conclusions, which are based, first, on the negative experimental results in trying to reproduce this condition, and, secondly, on the things observed while operating on these tumors. In 1915 I attempted to reproduce this condition in new-born puppies by shelling out the mucosa and infolding it with fine fascial strips. In this way we produced an obstruction similar to that seen in cross-section of the tumor. A slight hypertrophy of the stomach wall was found due to the hypermotility produced by the obstruction, but no pyloric tumor was formed. In several instances fine platinum electrodes, placed on the pneumogastric nerves, increased the peristaltic action, but no tumor was formed. By isolating the pyloric segment, by cutting away a circular strip of musculature, no independent peristaltic waves were produced and no tumor was formed.

This experimental work demonstrated to my complete satisfaction that it is impossible to form a pyloric tumor unless some experiment can be devised whereby the independent, rhythmic, snakelike contractions of the pylorus can be reproduced.

Dissection of these sixty-five tumors at operation showed that the tumor was absolutely proportionate in size to the age of the infant. This demonstrates that the tumor must be a progressive, developmental affair. Whether this muscular hypertrophy starts before birth, within the uterus, or at birth we can fairly estimate by the fact that Dent reported a pyloric tumor in a 7 months fetus, and several investigators have found them in the new-born. I believe that the condition begins during the fetal development of the stomach and is brought about by the rhythmic contractions of the pylorus which doubtless start at that time, and is due to an abnormal stimulation from the intrinsic or extrinsic nerves of the stomach. This condition of hypertrophy, then, must progress very slowly during the fetal life, but becomes accentuated after birth, owing to the additional irritation produced by the taking of food. The tumor gradually increases in size as a result of the rhythmic contractions of the pylorus, until at the age of from 7 to 12 weeks we have seen tumors four or five times as large as those found at 3 or 4 weeks.

The size of the tumor, however, does not indicate the amount of obstruction present. For instance, a large tumor may be associated with very little pyloric obstruction, and a small hypertrophy may produce almost a complete obstruction.

I base my hypothesis on the fact that the fluoroscopic examination has in many instances revealed these characteristic, rhythmic, snakelike contractions of the pylorus, even though the child had vomited and the stomach was completely empty. It seems reasonable to conclude that the same contractions occur during fetal life, and are accentuated at birth, thus producing the tumor, which increases in size in proportion to the age of the patient.

30 North Michigan Avenue.

HYPERTROPHIC PYLORIC STENOSIS IN INFANCY *

WILLIAM D. HAGGARD, M.D.

Professor of Surgery and Clinical Surgery, Vanderbilt University, Medical Department; Surgeon to St. Thomas Hospital

NASHVILLE, TENN.

A lusty boy baby, the first born of a healthy mother with ample milk, who about the third week begins frequent regurgitant vomiting, soon becoming projectile and associated with visible peristalsis, and in whom an olive-shaped tumor may be palpated in the upper right abdomen, is almost certainly the victim of congenital pyloric stenosis.

Undoubtedly there have been many infants, whose deaths were ascribed to marasmus, gastritis, inanition, etc., who really were suffering from unrecognized pyloric stenosis. Up to 1906, the mortality results of surgical intervention in former years, 53.9 per cent., were so forbidding as almost to contraindicate it in the minds of many physicians. The results are greatly improved by substituting simple pyloroplasty, Rammstedt's operation (1912), or the operation of Strauss (1914) for gastro-enterostomy. The operation may be done in less than half the time required for a gastro-enterostomy and with nearly one half the mortality, that is, 18 per cent. This may be further reduced by the employment of local anesthesia, hereafter to be discussed.

The essential pathology is a congenital hypertrophy of the pylorus, especially its transverse muscular fibers, spasm being added as a secondary consideration. "The effort necessary to force food through the narrowed and elongated pyloric lumen produces circulatory disturbances resulting in edema. As the food increases in amount, the muscular effort becomes greater, the lumen narrows down until finally at the tenth day, or a little later, it becomes more or less completely obstructed" (Downes).

At necropsy there is found at the pylorus a napkin-ring-like tumor, often as hard as cartilage, that projects into the duodenum, like a cervix uteri. It is pale in color, three-fourths to 1 inch in length, and in diameter as great as the last joint of an adult's thumb. The swelling has been compared in size and shape to an olive, a peanut or a pecan. On section the orifice is seen to be much diminished in diameter, but what is especially striking is the great thickness of the wall of the pylorus. The lumen may be still further diminished by thick folds of mucous membrane. Probably because of these powerful contraction waves, the prepyloric tissue, as well as the tumor itself, may be edematous. The walls of the stomach become hypertrophied. The stomach may be dilated or rather ballooned. It is sometimes smaller than normal.

Many writers have shown conclusively that the tumor remained after operation. Cases are reported by Morse, Walton, Downes and Holt, and in those of spontaneous cure, as in Howland's case, the hypertrophy remained. Roentgen-ray examinations have shown a closed pylorus three weeks after operation, and Lewis and Grulee picture one 256 days after gastro-enterostomy.

Probably the hypertrophic pyloric stenoses occurring in young adult life may be explained on the basis of a spontaneous cure during infancy with the congenital hypertrophy remaining.

The case of one of Palmer's patients, dying before permission to operate had been obtained, showed that the extirpated stomach had a water-tight pylorus that held without any escape through the dependent pylorus when the stomach was filled with water. In another instance, the pylorus was shown to be closed roentgenologically eight or ten years after a gastro-enterostomy. It is not a spasm but a true hyperplasia.

A case of pyloric stenosis presents a picture so characteristic and clear-cut that diagnosis should not fail.

SYMPTOMS

In the order of their importance the symptoms are as follows: (1) persistent, recurrent, explosive vomiting; (2) starvation stools and diminished urine, with emaciation; (3) visible gastric peristalsis; (4) palpable tumor; (5) bulging epigastrium, with stretched abdomen; (6) progressive loss of weight.

The symptoms may appear within a few days after birth, or be delayed until the second and rarely the third month. They usually appear during the third or fourth week. Vomiting is the first symptom usually noted. A previously healthy, normal, usually robust male, breast-fed baby, begins to vomit abruptly in the

* Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Sixty-Ninth Annual Session of the American Medical Association, Chicago, June, 1918.

third or fourth week without apparent cause. To the persistent, explosive, forcible vomiting is added symptoms of faulty nutrition, constipation, oliguria and steady loss of weight. The vomiting is characteristic and different from other vomiting in young infants. The baby is not simply "mewling and puking in the nurse's arms." Food is ejected from the mouth at times to a distance of three or four feet. The vomiting may come on directly after nursing, or it may occur several hours after food is taken. It may be a portion of food taken at a previous meal. Vomiting may occur only once a day and consist of food taken in the previous twenty-four hours. There is no increase in temperature, and at the first the child is hungry, even after vomiting. Then after a time the appetite may fail. The baby is good, surprisingly good, not fretful and usually sleeps quietly. Finally the vomiting becomes persistent, change of food may lessen the vomiting for a day or so and then it returns as severe as ever. There is motor insufficiency and food may be removed from the stomach with a catheter from six to ten hours after feeding. There may be remissions and gain in weight, which only disappear again as soon as vomiting recurs.

Visible gastric peristalsis is a constant symptom. The wave passes from left to right and may be elicited after taking food. The waves may be seen and felt often after flicking or manipulating the abdomen. Mitchell[1] says that the characteristic peristaltic wave looks like two balls rolling one after the other over the epigastrium from left to right. A good plan to elicit peristalsis is to give a meal of some artificial food rather rapidly, through a large-holed nipple and watch the abdomen for fifteen or twenty minutes.

Palpation a little to the right and above the umbilicus often reveals a tumor about the size and shape of a small green olive. Careful, persistent palpation with one finger to the liver side of the middle line, upward, backward and from right to left, against the spine, will very often disclose a firm tumor no bigger than a pimola. Visible peristalsis is seen to be the best evidence, except the tumor when felt.

In severe cases the patients become progressively worse and may lose a pound a week. The child may waste to a skeleton, weighing 3 or 4 pounds. The average weight of these patients coming to operation is 6½ pounds. The average time is six weeks and the average duration of symptoms about four weeks.

The roentgen ray is very valuable in showing the actual pathologic condition of the pylorus and especially whether retention is present. Fluoroscopy shows the rhythmic sinous contraction of the pyloric tumor apart from contraction of the stomach proper. As pointed out by Strauss, if one half or more of the opaque meal is retained as shown by the screen or plate at the end of, say, four hours, operation should be the rule.

TREATMENT

Only the very mild cases without contractions of the tumor and with only partial retention should have medical treatment and dietetic treatment.

If the infant is not losing weight and the vomiting is mostly regurgitant and not projectile, and there is at least one milk stool every forty-eight hours and if the roentgen ray shows an appreciable amount of food passing through the pylorus, tentative medical treatment may be employed. All others should be treated by operation just as any other mechanical obstruction in the alimentary canal. If no real material gain has been brought about in one or two weeks, or if the baby is losing 1 or 2 ounces in weight a day, operative treatment is urgently indicated before the child gets into a wellnigh hopeless condition. Even if the child should eventually recover, it will only be after a very prolonged and perilous course.

It has been shown by Holt and Downes at the Babies' Hospital, New York, that during a period of fifteen years when the operation was performed, only after the patient had resisted medical treatment, the operative mortality was 58 per cent. When the diagnosis was made and operation resorted to, usually soon after admission and diagnosis, the surgical mortality dropped to 43 per cent. Abt thinks that less than one third of the patients recover under medical treatment.

If every patient in cases of hypertrophic pyloric stenosis was operated on as soon as the diagnosis was established, with the present improved technic, the mortality for this condition, when the patient was subjected to operation, might be reduced generally to approach 10 per cent. Failure to seek prompt surgical relief is too often fatal. Even though the baby may be apparently holding its own under medical treatment, it may suddenly, and without apparent cause, become progressively worse and die in a short time.

Local anesthesia is very much more satisfactory in an infant than in an adult. An infant has very little or no physical consciousness of pain and no fear. Local anesthesia really blocks off all traumatic stimuli to the brain, to say nothing of the absence of the shock and dangers of an inhalation anesthesia. General anesthesia is no more satisfactory to the operator and may be extremely harmful to the child. It is certainly not as safe, nor is it necessary to give narcosis for the operation of pyloroplasty. Moreover, the mortality ought to be definitely lowered by the substitution of infiltration for pulmonary anesthetics in babies.

Even today there are many reports of infants brought to operation in a pitifully emaciated condition, due to long continued medical and dietetic treatment. In these cases, the opportunity and safe time for prompt surgical intervention had gone and the forlorn risk was assumed by surgery as a last hope, when really the death was a medical one and due to well-meaning, but misguided efforts to overcome an impermeable obstruction.

1. Mitchell, E. W.: Ohio State Med. Jour., 1916, 12, 726.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. STRAUSS AND HAGGARD

DR. FRANK X. WALLS, Chicago: The term "congenital pyloric stenosis" should give way to the term "infantile pyloric stenosis." These cases invariably show an interval after birth in which the children are perfectly normal; in which they take their food and develop normally. There may be, as with every child, a primary loss of weight which is soon made up, and then the babies grow, add to their weight, present no symptoms of vomiting or of retention of food in the stomach, and have normal bowel movements. Then, after an interval of usually ten days to two weeks, the symptoms begin, as described, symptoms indicating stenosis of the pylorus. It must be understood that this is not an atresia; that food does in all of these cases pass through the pylorus into the gastro-intestinal tract in more or less amount. You will recall the case Osler speaks of as the first case published, giving credit to Beardsley. In that case the child lived until it was 5 years of age. These children do not all die in infancy; they suffer a great deal from symptoms due to insufficient food, marasmus, etc., and often pass away

from some definite intercurrent condition and are not thought to be cases of stenosis. We do not know anything about the causation of this disease. The tumor mass has been found in children who have been stillborn, and the tumor mass has persisted for a long while in cases in which operation has been performed. I think that the fact that the tumor mass persists for a long time after operation might indicate that the nervous mechanism has little to do with the hypertrophy as we understand it. We have cases of spasm of the pylorus which may persist for a long time, in which the symptoms may be very severe, but in which the spasm of itself does not lead to hypertrophy. These hypertrophic cases, however, are always associated with some spasm; that is, the normal musculature or the hypertrophic musculature is subject to the same stimuli that the normal musculature is, and we have spasm associated with the cases of obstruction.

Dr. Weller Van Hook, Chicago: In reviewing the papers presented we are particularly struck with the fact that we have turned aside from gastro-enterostomy almost entirely, which, of course, is but a temporizing method at best. We should bear in mind the value of directness of attack with reference to lesions everywhere in the body. In this field we hope to be able to do away with gastro-enterostomy, although its successes have been brilliant. The most important point added to the Rammstedt operation by Dr. Strauss is the entire circumferential freeing of the mucosa, which makes it possible for the fluids to pass rapidly. The plastic work on the muscle is, I think, not only unnecessary but mischievous. It is gratifying to see that Dr. Strauss is able to do his work through an incision so small. He is not disturbed after the delivery of the tumefaction by the escape of abdominal contents, so that the operation proceeds more surely and swiftly to its conclusion. We think well, also, of the idea of local anesthesia, but many will be conforted with the idea that children bear general anesthesia extremely well.

Dr. I. A. Abt, Chicago: I has been my privilege to see these cases treated both medically and surgically. I remember the time when the medical treatment was preferred. Under this plan a number of patients recovered. The mortality with medical treatment, however, was extremely high. We found that a large number of these patients treated expectantly lost markedly in weight, developed toxemia and died within a short time. We learned, too, that if these babies lost more than one third of their body weight they were then within the danger point, and if the wasting continued they progressed rapidly toward the fatal end. Therefore, we were very grateful to the surgeons when they contributed gastro-enterostomy to the treatment of these patients, because more children were saved by this operation, if performed properly, than by expectant or medical treatment. But, as time went on, we observed that gastro-enterostomy performed on small babies was a difficult operation and that the mortality figures varied; some surgeons had a very low mortality, though in the aggregate the deaths from this operation were high. The Rammstedt operation and that of Dr. Alfred Strauss should obviously be the operation of choice. They are more rapidly performed, there is less shock and no danger of leakage because the stomach and bowel are not opened. Concerning the diagnosis, I wish to subscribe to what Dr. Strauss and Dr. Haggard have said with reference to the roentgen-ray examination. It has been held that it is unnecessary, that it contributes nothing toward the diagnosis. I believe, however, that if the roentgen-ray examination is made by a competent technician, with the baby in the proper position, we have an invaluable test concerning stenosis of the pylorus. We have made it a rule to submit every case to roentgen-ray examination after giving bismuth in milk. A picture is made shortly after the ingestion of the bismuth and another picture is made in four hours. At about the time of taking the first picture we observe the baby's stomach with the fluoroscope, noting whether the bismuth passes through the pylorus and also the movements of the stomach. I wish to take the liberty to remind surgeons that especial attention should be given to technic in operation on these small patients. Babies, as is well known, stand protracted operations poorly. No time should be lost and the operation should be finished as rapidly as is consistent with careful work. My observation is that surgeons frequently lose valuable time in finding suitable instruments, sutures and needles or clamps while the little patient is being operated on. I think all of these interruptions increase the hazard of operation. I am sure that every abdominal surgeon knows all there is to be known about the closure of the abdominal wound, but I have not infrequently seen the abdominal wound separate completely several days after operation. These babies should be fed shortly after operation. Our babies are fed two or three hours after operation, and we give the first day dram doses of breast milk every two hours—after twenty-four hours we give from one-half to 1 ounce of breast milk every two hours. In three or four days these babies are put to the breast. We emphasize that early breast feeding is of great advantage in the after-treatment. I should like to ask Dr. Haggard what kind of local anesthesia he uses. Many of the stock preparations used for local anesthesia in adults contain too much morphin or cocain for routine use in infancy. I believe with Dr. Van Hook that babies stand general anesthesia very well.

Dr. J. W. Keefe, Providence, R. I.: I have been interested in this subject of pyloric stenosis in infancy for more than twelve years, and I am very glad to find that Drs. Strauss and Haggard are advocating operations at the site of the trouble. Gastrojejunostomy never appealed to me. The only criticism I have of Dr. Strauss' paper is that he does too much. One can make a small incision, with a clamp you can grasp the stomach, pull out the pylorus, grasp it with the thumb and finger of the left hand and with the knife in the right, cut down to the mucosa. An assistant can grasp the edge of the muscle with a mouse toothed forceps, which does not look like muscle, but more like cartilage, and can cut a crescentic piece from one side and then the other side. One can place a little omentum over the flap with one stitch and drop the pylorus back. It is all done in four minutes.

Dr. Alfred A. Strauss, Chicago: I believe that Dr. Haggard's idea concerning the local anesthesia is good, provided it is done perfectly. Local anesthesia not done perfectly will produce shock. It must be done carefully and by an expert. It may be preferable in some cases to a general anesthesia. I have had no postoperative hernias or wound infections in sixty-six cases in which operation was performed. There is a difference between the so-called pylorospasm, which is also a spasm of the entire intestinal tract, and a true case of congenital pyloric stenosis. The former have a normal emptying time, as observed under the fluoroscope, while the latter have a distinct, rhythmic, independent, snakelike spasm of the pyloric segment and a retention which may be complete or partial at the end of four hours. The size of the tumors is in direct proportion to the age of the patient. Dr. Keefe spoke of cutting a piece of the muscle away on each side. It takes but ten minutes to do this operation, and I believe it is best to have a complete reconstruction of the pylorus surrounded with normal muscle, since this hypertrophied muscle has been shown to be histologically normal. This is accomplished by making a muscle flap from the muscle tumor and suturing together with a few interrupted sutures, and the raw surfaces covered with the free edge of the attached omentum. Dr. Keefe's idea of cutting away the muscle will produce a greater hernia of the mucosa than the Rammstedt operation, which I believe is a very undesirable feature.

Dr. William D. Haggard, Nashville, Tenn.: In our local anesthesia we employ procain, 0.1 per cent. Any one not having heretofore tried it will find it surprisingly pleasant, exceedingly satisfactory and efficient.

Malaria in India.—In the Bombay presidency in the three-year period 1914-1916, according to *Public Health Reports*, there were admitted to the hospital 1,352,372 cases of malaria as compared with 1,171,600 in the three-year period from 1911 to 1913. The increase was due mainly to an accession of malaria in the province of Sind on account of excessive rains and an abnormal inundation of the Indus in 1916. It does not, it is said, indicate a relaxation of the efforts of the government to combat malaria in the especially malarious tracts.

Military Medicine and Surgery

EXAMINATION OF MEN ENTERING THE AVIATION SERVICE

A NEW TEST AND METHOD OF CLASSIFICATION FOR LABYRINTH, MUSCLE TONE AND BLOOD PRESSURE FINDINGS: PRELIMINARY REPORT

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To be an aviator a man must be physically qualified, his eyesight must be normal without glasses, and his static ear must respond to the regulation tests for nystagmus, past pointing and falling. This gives us an aviator who is a perfect type of man, but is this enough?

For ordinary maneuvering close to earth the man does not require to be so finely adjusted, for he is in a medium of air almost the same in density and condition as that at the earth's surface. This does not hold true, however, for the aviator who ascends to more than a thousand feet, as when he has attained a greater altitude, he experiences varying conditions of density and temperature, which change in a direct and fixed ratio at the different levels. Were it the practice of the aviator to ascend and descend to any given altitude at a moderate rate of speed, he might not have to be chosen with so much care; but we know that he must change his altitude suddenly, and in many instances to a great amount, so that he is subjected to violent variations of temperature and especially air pressure, sometimes within a few seconds. To consider this phase of aviation is my theme.

Fig. 1.—Dynamometer test for length of one nerve impulse at 60 kg., measured in seconds.

In order to understand the meaning of atmospheric influence, it is necessary to determine the difference in air pressure at the several altitudes. The pressure of air at sea level is about 14.7 pounds per square inch. At 20,000 feet altitude it has been reduced to less than half the earth's surface pressure, and at 30,000 feet it has fallen to about one third of the pressure at the earth's surface.

Motor manufacturers have had to recognize this fact in the equipment of carbureters furnished aeroplane machines, for it is necessary to have a regulating device to feed three times the amount of oxygen into the gasoline mixture at 15,000 feet that is required at the earth's surface. The temperature at 25,000 feet altitude is far below zero (F.), while the sun's rays register near 140 F. Thus the aviator may have his feet frozen, and his face, were it exposed, would be blistered from the sun's rays. As we ascend, the content of the air is not changed, but the oxygen tension is diminished, at 16,000 feet it being only 25 per cent. of the tension at the earth's surface.[1] Should we attain a great altitude, therefore, it would become necessary to make use of an oxygen mask to be able to carry on proper aeration of the blood. Aeroplanes are now being supplied with a device by which oxygen is fed to the engine and to the aviator automatically, as the altitude becomes greater, and which diminishes the oxygen supplied as the altitude becomes less.

Most men do not experience much change going from a denser into a rarer medium, which occurs in ascent, but when traveling rapidly from a rarer into a denser air, some very striking symptoms are produced, which vary in degree from slight vertigo to syncope and at times motor paralysis.

It is necessary to have men selected, so far as possible, who are perfect. The life of the aviator is all important as the information which he supplies determines the maneuvers on the earth's surface or on the sea. His photographs are absolutely essential. When the war began a machine capable of 60 miles per hour was considered all that could be looked for, and the ascension to 10,000 feet altitude in half an hour was thought wonderful. In order to leave the earth's surface, the air craft was required to gain momentum by running on the ground for several hundred feet before it was able to take to the air. At the present time, the machine must be able to leave the ground almost immediately and be able to climb at the rate of 1,000 feet a minute. The speed of the present machines in the German army, we are told, is not less than 140 miles an hour, while their scouting craft do as much as 200 miles an hour.

It has occurred to me that the examinations that are being made are not of sufficient scope, as they show nothing of the condition of the applicant in actual flying, and it is with this idea in view that I have directed my attention in the following work, which is, so far as I know, entirely new.

To have a sound body and a normal vestibular apparatus is well enough, but clinically, we know that some people who have all this are subject at times to dizzy spells, seasickness and fainting, when subjected to motion or air pressure changes, such as one would encounter in the act of flying. Therefore, some sort of test should be made to simulate actual conditions met in flying, and the results determined.

Aviators do not merely fly in their machines; they are required to do evolutions in order to escape from their adversaries or gain advantage of them in the game of war. No matter how expert a man may be

1. Report of Medical Research Board, Mil. Surgeon, February, 1918, p. 146.

with a machine gun, he would be powerless in combat unless he were able to outmaneuver his adversary in reconnoitering, so he can bring himself into a vantage position to get "on the tail" of his opponent and thus be able to put his machine gun into effective operation. In order to gain this advantage, it is necessary for the

Fig. 2.—Front view of cabinet and exhaust pump: *a*, altigraph; *b*, vacuum gage; *c*, petcock for letting air into cabinet; *d*, glass window; *e*, tube connecting cabinet with pump.

aviator to do trick flying, which means that he must be able to ascend and descend very rapidly and do irregular motions, thus making his adversary believe he is disabled or killed. He does this by falling as

TABLE 1.—DETERMINATION OF HEIGHTS BY THE BAROMETER*

Values of $60368\ (1 + 0.0\text{/}10195 \times 36)\ \log. \frac{29.50}{B}$

Barometric Pressure		Altitude, Feet	Barometric Pressure		Altitude, Feet
Inches	Mm.		Inches	Mm.	
11.00	286	25,900	21.50	559	8,964
12.00	312	24,814	22.00	572	8,339
12.50	325	23,704	22.50	585	7,729
13.00	338	22,638	23.00	598	7,131
13.50	351	21,612	23.50	611	6,546
14.00	364	20,624	24.00	624	5,974
14.50	377	19,674	24.50	637	5,414
15.00	390	18,749	25.00	650	4,865
15.50	403	17,858	25.50	663	4,326
16.00	416	16,995	26.00	676	3,799
16.50	429	16,158	26.50	689	3,281
17.00	442	15,347	27.00	702	2,772
17.50	455	14,559	27.50	715	2,274
18.00	468	13,793	28.00	730	1,784
18.50	481	13,049	28.50	743	1,303
19.00	494	12,324	29.00	756	831
19.50	507	11,618	29.50	769	
20.00	520	10,930	30.00	782	
20.50	533	10,259	30.50	795	—540
21.00	546	9,604			

* Smithsonian Meteorological Tables, third revised edition, 1907, pp. 100-103.

though hit or out of control. He must be able to drop, irrespective of plane position, for several thousand feet, if necessary, and be able at a given monment, to "flatten out" so that he can loop over or under his opponent and bring up on his adversary's "tail," under and behind him.

In subjecting himself to these motions and traveling through the air at such terrific speed, forward, upward or downward, he experiences violent variations of atmospheric pressure conditions, and it is obvious that he should be tested as to his ability to resist these sudden changes in air pressure. To judge the ability of an applicant for this service, we should test him in some way which simulates, as nearly as possible, an actual flight with such maneuvers.

In order to obtain this information without actual flying, I have devised a cabinet which meets all the requirements in all particulars. The object of attempting this series of experiments was suggested to me by the reports that were constantly printed in the press stating that a certain number of planes were shot down in combat, while others went down out of control. It appeared to me that there must be a reason why so many fell out of control, not from any damage done by the opponent, but rather from some cause in the man himself who fell to his death. I have learned since beginning my experiments that in 50 per cent. of falls, nothing faulty with the engine has been discovered, the plane has had no marks of being hit, nor has the aviator received a wound from his adversary. Therefore, it appears that half of the fatalities in aviation are due to a cause other than those we term "effects of combat."

Causes that may produce the fall of an aeroplane may be divided into two classes: (1) from fault of the machine, and (2) from fault of the operator.

1. From fault of the machine, a fall may thus occur:

(*a*) The plane may have remained in the air too long by an extensive flight and have exhausted the supply of gasoline (this is not often productive of a fall, as the pilot can volplane to earth and land safely).

(*b*) The motor may have become fouled by faulty or worn machinery or connecting parts.

(*c*) The motor may have been hit and thus put out of commission.

(*d*) The steering gear or planes may have been shot away.

(*e*) The gasoline tank may have been hit and set afire or exploded.

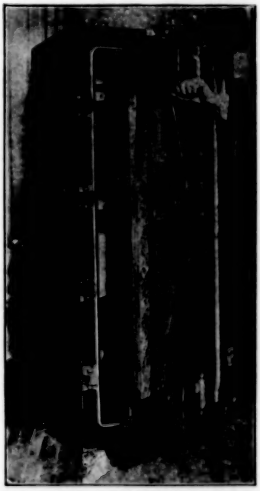

Fig. 3.—Rear view of cabinet, showing door with locking air-tight device.

2. From fault of the operator, a fall may thus occur:

(*a*) The operator may have been killed or injured, making it impossible to work the steering gear of his machine.

(*b*) The operator may have become entirely exhausted.

(*c*) The operator may have become dizzy from change of

air pressure, and the vertigo may have been so severe that he has lost control of his plane.

(*d*) The operator may have lost his motor power from great atmospheric pressure changes.

(*e*) The operator may have become unconscious from hemorrhage into the labyrinth, or from heart failure.

The object of these experiments is to ascertain if any of the causes mentioned as being the fault of the operator can be detected, and to find a remedy, so far as the army aviator is concerned, if possible.

single nerve impulse, for both the right and the left hands (Fig. 1). The turning test for nystagmus is done the same as in the present Army test for the horizontal canal, and is given in the number of seconds the nystagmus persists. The past pointing is also given in seconds for each hand instead of the number of times he points incorrectly, which gives us a better value to the amount of past pointing.

After this examination the applicant is placed in the cabinet and the air exhausted at the rate of 1,000

TABLE 2.—ASCENT TO 6,000 FEET ALTITUDE IN SIX MINUTES; DESCENT IN THIRTY SECONDS

Name	Age	Pulse		Blood Pressure				Dynamometer				Rotation										Class	Remarks
				Before		After		Before		After		Before				After							
		Before	After	Systolic	Diastolic	Systolic	Diastolic	R	L	R	L	Nyst.		10 to R.		10 to L.		Nyst.		10 to R.		10 to L.		
												R	L	R	L	R	L	R	L	R	L	R	L	
W.	19	...	...	128	76	145	85	2	2	3	1.5	23	18	20	22	14	16	20	20	24	31	15	19		
M.	26	...	...	140	66	145	65	4	3	3	2	10	10	5	5	5	5	14	12	24	17	14	17		
P.	19	...	...	140	80	150	70	3	3	2	2	24	24	10	5	10	5	22	31	27	9	21	24		
K.	24	...	...	140	70	150	74	6	5	4	3	17	17	5	10	5	5	12	14	20	9	21	23		
H.	25	...	...	120	80	130	70	6	7	6	4	25	25	50	35	27	35	27	28	15	20	15	18	....	Rejected for perforated membrana tympani after mastoid operation
H.	25	...	...	146	82	170	82	3	5	4	5	16	15	47	40	13	17	15	18	12	14	12	17	....	P. P. to R., R. H. to R.; L. H. to L.; P. P. to L., normal
G.	28	...	...	140	80	165	80	2	4	2	2	26	30	..	..	..	..	30	30	19	11	28	40		
S.	24	...	...	134	84	150	78	4	3	3	4	25	24	15	15	20	20	24	20	8	9	12	14		
W.	21	...	66	146	92	160	80	4	3	4	4	26	26	10	10	15	10	22	18	12	16	14	16		
O.	22	...	...	138	80	150	75	3	2	3	2	22	20	5	5	5	5	18	17	25	25	12	17		
B.	19	...	...	138	80	140	80	2	2	2	1	27	25	..	..	..	..	30	22	8	10	18	8		
B.	28	...	...	120	74	120	64	3	3	3	3	20	20	10	5	10	5	15	17	12	19	20	6		
V.	24	...	...	135	60	130	60	3	3	2	3	18	20	38	38	..	..	25	20	18	8				
L.	22	...	...	140	60	130	60	4	4	3	3.5	18	20	5	5	10	15	21	18	12	12	30	30	....	P. P. to R. divergent
E.	25	...	...	138	60	138	68	3.5	3	3.5	4	20	17	5	7	5	5	20	20	11	11	11	11		
A.	23	...	...	122	70	110	65	2	2	1	1	22	18	10	10	10	10	15	12	8	15	10	15		
M.	25	...	...	150	82	115	70	...	...	...	...	20	20	5	5	10	5	14	13	16	16	17	8		
D.	30	...	...	120	80	160	65	3	3	3	2	14	14	8	9	10	10	17	12	4	11	11	15		
I.	19	...	...	130	65	125	75	2	2	1.5	1.5	23	18	8	8	4	4	15	13	5	5	8	10		
J.	35	...	...	130	75	124	88	3	3	2	2	25	25	35	22	18	25	15	20	12	7	16	22	....	Bal. serv.
H.	23	...	...	138	88	142	104	3	3	3	2	17	18	5	5	5	5	27	10	3	3	14	15		
D.	25	...	...	172	80	136	88	4	5	3	3	20	25	12	12	8	12	12	12	3	5	8	12	....	Left handed
M.	22	...	...	140	70	150	80	2.5	2.5	2.5	2	32	25	10	12	12	17	20	21	12	12	5	5	....	R. H.; shoots with L. H.
H.	21	...	...	120	65	125	80	2	2	4	3	20	20	3	3	3	3	18	19	3	3	2	2	....	L. H.; writes with R. H.
S.	29	...	...	124	74	120	67	3	2	1	2	20	18	2	2	2	2	20	14	23	25	18	18	....	L. H.
B.	22	...	...	130	70	125	80	3.5	5	4.5	2	25	20	1	1	2	2	21	14	21	22	17	18		
B.	22	86	74	126	88	130	80	5	3	5	2	24	24	25	20	10	10	50	12	8	22	12	12		
R.	22	...	...	130	78	125	70	3.5	3.5	3	3.5	22	25	15	15	15	20	22	18	13*	4*	13	3	....	* 10 to R., divergent
K.	22	...	...	120	80	105	55	6	4	2.5	2.5	20	18	10	10	5	10	10	10	15*	5	5	....	* P. P. to L.
F.	19	72	68	122	72	110	65	5	5	5.5	5	30	22	15	15	5	5	17	12	to L.15	15	15	to R.15	....	Div. P. P.
R.	21	...	82	138	80	112	65	...	...	...	...	22	25	16	17	12	12	12	14	5	5	14	15		
S.	20	...	76	130	88	118	75	...	...	...	...	22	21	8	8	10	12	18	14	10	10	25	30	....	Strongly R. H.
T.	20	...	72	112	78	120	60	7	8	4.5	3	26	23	15	17	5	6	15	20	15	10	15	20	....	L. H.
D.	27	72	64	124	78	122	80	9	10	2	3	20	18	5	15	5	5	13	7	12	16	4	5		
L.	28	72	68	130	70	123	80	9	9	5	4	30	30	6	8	8	15	14	15	13	13	5	5		
D.	22	...	84	145	84	128	72	7	3	7	4	20	18	8	12	9	11	12	12	10	12	18	20		
H.	35	72	68	144	83	150	70	...	...	...	...	22	25	15	18	12	12	21	22	7	7	7	12	A	L. H.
L.	27	80	88	118	78	135	68	2	2.5	2.5	2.5	30	22	5	17	5	5	12	12	12	8	5	6	A	
R.	27	104	108	128	96	138	70	2	2	1	1	30	22	72	74	20	30	20	20	24	18	26	28	B	L. H.
W.	22	76	62	144	82	145	98	3.5	1	1	1	25	30	12	10	28	17	13	13	8	8	16	28	A	L. H.; writes with R. H.
J.	27	82	80	118	70	135	95	2	2.5	2	2	20	23	6	12	8	14	15	15	5	15	6	13		
L.	24	74	72	145	88	145	85	4	3	2	1	20	20	10	14	8	10	10	11	20	13	20	17		
W.	50	68	100	145	88	145	85	2	5	4	6	20	30	30	8	5	13	8	11	5	8	11	15		
O.	30	...	102	158	82	170	78	8	5	3	2	18	20	8	12	5	15	12	16	15	7	5	8	A	
K.	...	...	108	118	80	122	76	2	4	6	8	22	22	12	13	8	10	10	12	14	15	10	10	B	
S.	25	80	88	170	85	172	80	1.5	1	1.5	1.5	15	15	15	15	13	18	10	14	12	13	10	14	A	
W.	23	80	92	124	65	110	75	2	2	1	1.5	27	26	15	17	12	12	15	15	10	15	12	15	A	
W.	27	80	70	124	76	118	60	3.5	3	3	3	33	24	5	15	3	17	24	20	18	22	15	20	A	
W.	29	56	60	118	80	110	70	2.5	2	2	1.5	30	25	20	30	14	18	17	20	15	20	5	8	B	

In subjecting a man to this test, it is necessary to examine him both before and after he has been subjected to the test, so that a comparison of the findings may be had. He therefore is subjected to the regular physical tests for blood pressure, pulse, muscular tone and rotation. In testing the heart, I have taken both the systolic and diastolic pressures, and the rapidity of the pulse.

The muscle tonus is taken by the dynamometer for 60 kg. pressure and is represented in the number of seconds the pressure can be sustained by a

feet altitude per minute, until he has reached a height of 6,000 feet. He is kept in this rarefaction (which represents altitude) for a certain length of time, as shown in the tables. A fall is simulated by allowing air to enter the cabinet, and the time it takes to bring the pressure to that of the earth's surface represents a rapid or slow descent. In this manner, we can simulate an actual flight, and when the aviator has finally returned to the pressure of the earth's surface, he is again submitted to the tests for heart, motor power and rotation motions.

Tables 2 and 3 show the results of the different tests.

THE APPARATUS

The apparatus consists of a steel cabinet to which a vacuum pump is attached (Fig. 2). The cabinet is supplied with a mercurial altigraph (Fig. 2 *a*), the scale of which is marked to represent the vacuum in feet of altitude for each one-half inch. This altigraph will register from the earth's surface to an air to enter the cabinet, and the other connecting the vacuum pump. The pump is a Geryk of the high vacuum, double cylinder, cantilever type, which is operated by a one-quarter horse power variable speed motor, with rheostat control, so that the pump can be operated fast or slow.

In trying men who had flown, it was determined that the sensations they experienced were exactly similar to those they had during an actual flight. One

TABLE 3.—ASCENT TO 6,000 FEET ALTITUDE IN SIX MINUTES; CONTINUATION AT 6,000 FEET FOR FIFTEEN MINUTES; DESCENT IN THIRTY SECONDS

Name	Age	Pulse		Blood Pressure				Dynamometer				Rotation												Class	Remarks
				Before		After		Before		After		Before						After							
												Nyst.		10 to R.		10 to L.		Nyst.		10 to R.		10 to L.			
		Before	After	Systolic	Diastolic	Systolic	Diastolic	R	L	R	L	R	L	R	L	R	L	R	L	R	L	R	L		
C.	24	80	72	110	70	125	84	1	1.5	1	1	12	14	10	10	12	14	12	10	7	12	8	12	B	
M.	22	72	72	125	78	145	80	5.3	6	6	6.5	22	25	10	15	12	16	17	21	15	10	22	45	A	
C.	25	96	80	128	75	135	84	3.5	5	4	4	16	20	12	15	5	7	15	17	5	11	10	13	A	Rej. by board
W.	..	96	92	134	78	150	75	2.3	4	1	2	30	25	26	30	17	21	25	24	20	17	7	18	A	
B.	22	92	76	120	84	132	85	1.5	2	1	1.5	30	32	11	11	14	16	20	16	16	16	10	13	A	
B.	22	77	58	122	64	106	58	1.5	2	3	2.5	13	23	15	16	15	15	20	16	25	27	8.22	25	B	P. P. 8 by holding arm on arm of chair as guide
S.	26	78	72	140	68	140	60	1	1	1	2	32	32	10	12	15	16	27	24	20	22	25	22	A	
H.	24	90	84	124	70	120	65	1	1	2.5	2	23	26	16	20	12	20	27	26	10	18	15	6	A	
U.	19	84	80	135	75	135	80	1.5	1	1	1	22	22	20	10	20	25	16	20	22	27	18	21	A	
M.	26	68	60	118	70	128	80	4	2.5	3.2	3	20	22	12*	20	12	16	20	22	12	15	4	13	A	
G.	25	72	66	134	74	132	80	6.5	3.5	3.3	3.5	22	25	24	22	18	20	17	13	18	20	18	25	B	
W.	26	70	60	132	80	135	75	8	5	5	6.2	17	16	15	20	15	18	15	17	22	25	15	20	A	
G.	21	80	72	120	70	118	70	1.5	1	3	2	24	22	15	15	30	33	22	25	30	25	25	28	A	L. H.
A.	27	72	72	140	90	128	80	2	2	2	2	20	18	20	15	10	17	20	18	25	32	15	18	A	
F.	30	96	80	130	75	134	70	1	1	3	3.5	30	28	10	10	10	12	23	25	4	12	12	15	A	
S.	21	82	68	127	70	120	80	1.5	1	2	1.5	30	22	16	18	12	15	18	18	15	18	17	30	A	
S.	25	84	70	130	80	125	82	2	2	2	1	21	16	30	22	22	21	15	11	25	20	15	18	B	
R.	24	64	72	120	78	118	76	1	1.75	1.5	1.5	20	20	35	22	20	18	25	18	5	15	10	15	A	
V.	26	76	82	128	86	122	72	2	1.5	1.5	1.5	18	30	15	18	13	15	15	17	12	15	5	6	A	
W.	25	80	80	125	80	130	80	1	1	1.5	1.2	30	24	30	15	17	17	20	21	18	15	18	22	A	
P.	22	80	72	120	65	128	65	1.2	1	1	1.5	22	24	18	15	15	18	25	30	30	25	15	12	A	
B.	21	76	72	115	60	100	60	1	3	2	1.5	20	25	10	15	4	7	17	20	13	17	4	8	A	
C.	26	74	64	138	88	115	68	1.5	2	1	1	15	18	5	15	10	20	10	15	15	20	15	12	A	R. H. for writing; throws ball with L. H.
E.	20	76	68	148	88	120	80	2	1	1	1.5	15	15	30	30	20	30	8	12	25	25	12	14	A	
A.	23	84	76	140	70	115	70	2	1.5	3	2	27	24	8	8	35	30	18	18	10	10	30	18	A	
B.	28	92	76	138	80	130	80	1	4	4	6	30	30	4	5	5	7	13	17	11	11	4	5	B	Never was seasick or dizzy; has no effect at all
T.	25	72	72	140	80	120	84	4	3	3	7	15	16	5	5	7	7	12	12	3	3	3	3	B	L. H.; writes with R. H.
G.	24	96	88	138	88	120	80	2.5	3	2	1.5	22	26	5	13	10	13	16	19	35	45	6	8	B	P. P. to R. divergent
A.	22	66	60	130	86	115	70	6	6	2	2	20	20	5	15	10	18	9	7	5	5	5	5	A	
K.	20	90	92	124	76	122	76	2	1.5	2	2	22	24	7	12	30	35	20	15	8	10	15	8	C	Thin, hollow chest
G.	28	72	60	128	84	125	75	1.5	1.5	2.2	2.7	25	25	14	18	9	10	19	16	6	12	9	17	....	L. H. for most things
D.	22	76	72	135	76	120	70	4	2.5	6	5	18	18	55	62	11	37	13	9	6	15	11	15		
J.	25	76	66	140	80	120	70	2	1.5	1.5	2	30	25	15	20	15	18	15	17	12	26	16	18		
S.	25	74	72	124	82	130	70	2	1.5	2	1	30	20	14	15	10	26	17	19	15	19	10	18		
R.	24	88	88	122	76	120	100	1	1	2	2	19	24	15	15	15	17	17	15	15	7	10	10		
M.	22	92	50	138	68	90	70	1	5	2	5	18	22	10	15	15	15	15	17	4	15	10	14	....	Painted after vacuum test for 20 min. after out 10 min: Scotch and hair; 6 feet; strong
S.	21	84	88	146	86	120	76	3	5	2	2	24	28	15	18	19	20	20	23	10	25	20	15		
P.	22	72	70	130	74	104	76	4	3	2	2	17	16	17	20	17	20	16	14	8	8	12	12		
N.	25	66	64	126	70	120	78	2	2	2	2	17	22	17	15	12	17	8	12	3	6	5	12		
L.	24	92	92	148	68	150	108	1	1	1.2	2.2	31	25	8	10	4	10	26	17	12	15	6	10	A	
M.	28	88	82	130	80	117	70	1.5	1	1	1	15	15	8	5	5	5	12	12	7	5	5	5	A	
H.	22	96	84	140	90	125	84	2	2	1.5	2	30	18	10	12	4	12	17	19	13	17	10	10	A	
W.	25	96	84	130	70	118	62	2	1	1	1	22	30	5	7	5	30	18	17	5	7	5	15	B	
S.	22	92	84	118	64	130	80	1	1	1	1.5	20	22	5	12	27	17	17	16	5	14	22	10	B	

altitude of 25,000 feet. The cabinet is made of plate steel, being 5 feet high, 2½ feet wide, and an average of 3 feet in depth, being more than 3 feet at the bottom and less at the top. There is a window in the front of the cabinet 14 inches square, of half-inch French plate glass, through which the one being tested can be observed (Fig. 2 *d*). The door in the rear, 2 by 4 feet, is locked by a lever which works sliding beveled dogs, making the door close air tight (Fig. 3). The cabinet is provided with four petcocks (Fig. 2, *a, b, c, e*), one for connection with the altigraph, one for a negative pressure gage, one to allow intelligent flyer, of months' experience as an operator of a plane in actual warfare, told me the pain in his ears and head was the same as he had had in work in his machine, and so far as he could judge, the same experience as he had in actual flight. The type of the men examined should be noted as they are the same men who have been picked by the Aviation Corps for our flying squadrons. The fact of their being rare specimens both in mind and body would lead us to believe that they would show as little change in the tests as any body of men on earth, as they are all healthy men from the best American stock,

none of them over 30 years of age, while the great majority are from 20 to 24. Thus the material I have used is the hardest I could possibly find in which to show defects.

From a study of the tables it will be observed that those whose blood pressure was elevated showed a stimulation of the motor tone, and also a less depressed condition of the labyrinth. In those whose blood pressure was reduced, the muscle tone was less (most cases to the extent of 50 per cent. or more), and the labyrinth less active.

The matter for us to decide is whether we can tell which men will be most useful as aviators, and to classify the good from the poor. I would say that a man whose labyrinth is stimulated by a trial flight would be more acute than one in whom the labyrinth became less active. A man whose muscle tone is more, or at least as great after a trial, would be better than a man whose muscle tone is impaired. A man whose blood pressure is elevated would be better than if the blood pressure were lowered. On the one hand, we have a man who is being made more active, while on the other, we have a man who has a degree of shock, varying in degree with the amount of change exhibited. In the cases in which there is not much change in the findings, we would say they would be serviceable in balloon service, as they remain in the same medium of air for lengths of time. When the blood pressure and muscle tone are increased, and the labyrinth is more sensitive, I would consider the man a good risk. It is true that if this man flies long enough, he may have compensatory hypertrophy and arteriosclerosis, but not for a considerable time. The man with lowered blood pressure, lessened muscle tone and less stimulated labyrinth is a bad risk, and should never be allowed above the earth's surface. In this manner I have figured that in Table 2, 26 per cent. were unfit as aviators, and that in Table 3, 33 per cent. fell below the standard test. These men, in my opinion, will probably deteriorate rapidly and fall to their death if allowed to fly.

Tests for oxygen want do not enter into the conditions exhibited in my series of observations, from the fact that oxygen want manifests itself after time in the air and it is destined to be used as a test for the life of endurance of an aviator and not as a test to determine whether or not the man is fit to become a flier.

The thought presents itself that the men who show the greatest effects of oxygen want are probably those whose defects would be shown in this test before they become actual aviators; and, therefore, I would expect the percentage of those affected by oxygen want to be materially reduced, were men selected for air service by this test before being accepted as pilots.

I do not wish to appear too positive in my assertions, as the work is novel, and I have not had opportunity to follow these men who have been subjected to my test, to find whether or not they remain competent to fly. I therefore submit it for its true worth, reserving the right to change my opinion on any point mentioned in the scope of this paper, although it has been carefully considered, and I feel my contentions well grounded. The results of observations surely indicate that the general circulatory system has a very marked and decided effect on physiologic problems, and should teach us to consider more than vestibular findings, such as we have been accustomed to do in the diagnosis of diseased or perverted symptoms. The tests for vestibular irritation should be taken in a more scientific manner, as some of them at present leave too much to be desired in the matter of duration and accuracy.

Nystagmus is marked in seconds and there is no reason why past pointing and falling should not be determined in the same way. In this way we shall arrive at a more uniform method, and our findings will be of more importance in diagnosis.

30 North Michigan Avenue.

TABLE 4.—SUMMARY

	Blood Pressure										Dynamometer			Nystagmus								
	Increase				Decrease				Same					10 Turns to Right					10 Turns to Left				
	+10 Points		−10 Points		+10 Points		−10 Points							Increase		Decrease		Same	Increase		Decrease		Same
	Systolic	Diastolic	Systolic	Diastolic	Systolic	Diastolic	Systolic	Diastolic	Systolic	Diastolic	Inc.	Dec.	Same	+10 Sec.	−10 Sec.	+10 Sec.	−10 Sec.		+10 Sec.	−10 Sec.	+10 Sec.	−10 Sec.	
Table 2:	22%	24%	30%	8%	20%	22%	18%	24%	10%	12%	19%	80%	1%		14%	32%	40%	6%		10%	20%	70%	
Table 3:	13%	15%	13%	23%	43%	15%	22%	30%	6%	19%	35%	50%	15%		2%	12%	84%	12%		4%	12%	84%	10%

	Past Pointing																		Left Handed		
	10 Turns to Right										10 Turns to Left										
	Right Hand					Left Hand					Right Hand					Left Hand					
	Increase		Decrease		Same	Increase		Decrease		Same	Increase		Decrease		Same	Increase		Decrease		Same	14% Increase	R	L
	+10 Sec.	−10 Sec.	+10 Sec.	−10 Sec.		+10 Sec.	−10 Sec.	+10 Sec.	−10 Sec.		+10 Sec.	−10 Sec.	+10 Sec.	−10 Sec.		+10 Sec.	−10 Sec.	+10 Sec.	−10 Sec.		R	L	Inc.	Dec.
Table 2:	19%	27%	10%	29%	6%	8%	34%	15%	33%	10%	26%	26%	10%	29%	12%	30%	30%	12%	16%	12%	20%	5%		
Table 3:	10%	37%	6%	37%	12%	12%	37%	10%	37%	4%	2%	24%	2%	50%	22%	8%	8%	10%	60%	8%	.....	.....	20%	25%

Milk Substitutes.—In a recent issue of the *British Medical Journal* it is stated that, when there is a shortage of cow's milk, we require for many invalids, and indeed for others, a food which is at once a liquid, very easily digestible, inexpensive, very easily prepared, and without any strong flavor. It need not be a complete food, any more than cow's milk is, for it would not often be the sole food, except temporarily, as in brief febrile states. Such a food can be most simply made from oats as follows:

Boil 3 ounces of fine oatmeal in a double saucepan for at least an hour. Then cool to 140 F., and stir in two or three teaspoonfuls of extract of malt or of finely ground malt. The jellylike mass will quickly change to a syrupy liquid. Let it remain for an hour at the same temperature. It is then ready for use, and should measure 1 pint.

This liquid oatmeal has much the same composition as cow's milk, except that there is a deficiency of fat and some little of protein. It has lost most of the oatmeal flavor and is not so white as cow's milk.

SPECIAL TUBERCULOSIS EXAMINATIONS IN THE MILITARY SERVICE

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It was my privilege from the middle of last July to the middle of January of this year, to participate in the examination for tuberculosis of various branches of our army, including 7,589 prospective officers at the two Plattsburg training camps, 6,081 Regulars at Fort Ethan Allen, Plattsburg and Camp Devens, and 4,167 drafted men of the National Army at Camp Devens, Ayer, Mass.

Before taking up in detail our findings at the various camps, it might not be out of place to state a few lessons which practical experience taught us regarding the best method of procedure for the expeditious examination of so large a number of men.

BEST METHOD OF PROCEDURE

1. *The Personnel of the Examining Board.*—If the number of men to be examined is not more than 5,000, three medical officers will be able to examine the lungs of the entire command within one month. If the command is large, such as is found at the National Army cantonments, varying from 25,000 to 40,000, a larger board, of course, is necessary; but it was found most satisfactory to subdivide this larger board into smaller ones of three members each. The ranking officer takes complete charge of the workings of his board, including the paper work, which plays such an important rôle. Theoretically, this is supposed to be handled by the junior officer; but as the chairman of the board is held responsible for it, it inevitably results that he is the one who actually attends to it. Besides the medical officers, each board of three should have a noncommissioned officer and four enlisted men attached to it, each trained so as to be interchangeable with the other, should the absence of any one of them occur: one man assigned to each medical officer; one, who is able to use the typewriter, to act as clerk, while the noncommissioned officer is put in charge and made responsible for these men.

2. *Working Hours.*—The hours of work should not be too long, as the work is so intensive that it is tiring to both mind and body. A working day of between five and six hours is most satisfactory for the good of all concerned. A rest of ten or fifteen minutes should be taken at the end of each hour of examination.

3. *Number of Men to Be Examined per Day.*—If a detailed heart examination is not to be included, each officer can and should examine at least seventy-five men a day. This number can be raised to 100 should necessity demand, but ought not to exceed this mark, for after examining 100 men in a day, one's interest and powers of observation lag.

4. *Examination by Groups.*—We found it more satisfactory to examine the men in small groups of from five to ten each, rather than to have a long, continuous line. There are three main reasons for this:

(*a*) A line from 50 to 60 yards long is a most disheartening sight for the examiner.

(*b*) There is less noise with the smaller groups.

(*c*) The interval between finishing one group and starting the next is a very acceptable rest to the ears of the examiner.

5. *Posture During the Examination.*—If the examiner is young, active and not too heavy, the examination can be carried on standing, the medical officer moving down the line, instead of moving the line past him, thus eliminating the noise of the shuffle of feet. On the other hand, it may be found advantageous for the examiner to sit on a table, or something about that height, and have the men file past him.

6. *The Value of History Taking.*—We are told in Circular 20 from the Surgeon-General's Office that "conclusions of the examiners shall be based only on physical signs, sputum examinations and radiographs. Statements of the subject as to symptoms will not be accepted as proof of the existence of tuberculosis unless supported by objective evidence." Nevertheless, when we started in this work, we thought it might be helpful in many cases to obtain some sort of history of each man. We, therefore, used small cards for our own records, on which was a place for the man's name, rank, organization, a printed diagram of the chest, and four questions, concerning: (1) family history of tuberculosis; (2) pleurisy; (3) cough lasting for one month or more, and (4) hemoptysis. Every man was asked these four questions, and a positive answer to any of them was cause for a more thorough examination. This scheme, with some modifications, was used by the larger board at Camp Devens. It is quite apparent, on the face of it, that men who wish to get out of the service, as do many of our drafted men, will give more positive answers than men who are working to stay in, such as the men in the reserve officers' training camps, or the volunteer enlisted men. This was well brought out at Camp Devens, when we compared these four questions on the history records of 500 volunteers, among the Engineers, with the same questions among 500 of the drafted men. Table 1 was worked up by Capt. E. P. Eglee of our board.

TABLE 1.—POSITIVE ANSWERS

	Drafted Men		Regulars	
	No.	Per Cent.	No.	Per Cent.
Family history	94	18.8	30	6.0
Pleurisy	80	16.0	22	4.4
Cough	161	32.2	61	12.2
Hemoptysis	114	22.8	22	4.4
	449		135	

Of 2,000 questions, 449, or 22.4 per cent., were answered affirmatively by the drafted men. Of the same 2,000 questions, 135, or only 6.7 per cent., were answered affirmatively by the Regulars. Another thing which pointed to the apparent unreliability of routine histories is the fact that out of 11,631 examinations at the first and second Plattsburg training camps and at Fort Ethan Allen, we found positive signs of tuberculosis, where there was also a positive history in only twenty-one cases, or 0.18 per cent. These figures, as far as they go, seem to indicate that routine history taking in our work has helped very little, if at all.

7. *The Examination.*—The preliminary examinations used by all boards of which I was a member consisted merely of inspection and auscultation after cough, particular attention being paid to breath sounds only in doubtful cases, and when time permitted, as some idea of these may be obtained by listening to the inspiration following the cough. The men were instructed by one of our corps men how to exhale, cough and inhale, but I am free to admit that this procedure was done very poorly in many cases. Nature teaches us that when we want to cough, the

act is most effectively accomplished by taking in a breath before we do so. Now, to instruct an intelligent man to cough, after breathing out, is often difficult; but when one is confronted by an uneducated man or a man who speaks no language which the examiner knows, it is next to impossible, in the time allowed, to make him understand what one wishes him to do. If one can get such a man, and there are many thousands of them in our army, to cough at any time during the respiratory cycle, and then take a deep breath, one should be more than satisfied. I feel certain that auscultation following the cough at the end of expiration is, indeed, the best method for the detection of râles; but this procedure is sometimes very difficult in the Army.

8. *Disposition of the Cases.*—After this preliminary examination, if the man's lungs are found to be normal, his name is checked off his company's roster, which should always accompany every organization of men to be examined, and he is told to dress and return to his barracks. If anything abnormal is found, he is requested to wait and later is again examined, this time by each member of the board. He is then either passed or sent before the final disability board for its decision. This board should consist of the president of the tuberculosis board and two other members chosen by him. This group of three should have the final word as to the disposition of all doubtful lung cases referred to them. They should be able to obtain sputum examinations and roentgenograms, and also, if possible, have access to an observation ward, where the especially doubtful cases may be watched for a period of not more than ten days, by which time some disposition should be made of every case. Every medical officer sending a case before this board should be informed as to its disposition, as otherwise he will learn little and lose interest.

THE FIRST PLATTSBURG RESERVE OFFICERS' TRAINING CAMP

At the first Plattsburg reserve officers' training camp, the board consisted of three members, Major (then Lieutenant) J. C. Gittings, Major (then Lieutenant) J. W. Price, and myself. As we started work in the middle of summer, with the weather warm and clear every day, the examination of the entire camp, with the exception of one company, was carried on outdoors under the trees. This proved very satisfactory, as there was no shuffling of feet on wooden floors to contend with, and other small noises did not disturb as they do in a room. This, without a doubt, was the finest group of physical manhood that we have encountered anywhere. Each day we examined one company from 11 o'clock to a little after 12, and another company from 4 to shortly after 5 o'clock. These were the only hours the men could be spared from their training. The rest of the day we had for the reexamination of our doubtful cases, picked out of the line, or, as we always termed them, "hold-ups." Our results in this camp are given in Table 2.

TABLE 2.—EXAMINATIONS AT FIRST PLATTSBURG OFFICERS' TRAINING CAMP

	Number.	Per Cent.
Men examined	4,455	....
Tuberculous cases	10	0.22
Rejected for tuberculosis	5	0.11
Recommended for special service	4	0.09
Men with healed lesions, passed for active service	1	0.02
"Hold-ups"	325	7.20
"Hold-ups" who presented abnormal signs with negative history	118	2.60
Men presenting positive history with normal signs	156	3.50
Men presenting positive history, abnormal signs	51	1.10
Men with enlarged cervical glands or scars	19	0.42
Men presenting evidence of old empyema	14	0.31

FORT ETHAN ALLEN, VERMONT

After finishing our examination of the first Plattsburg reserve officers' training camp, the same board was ordered to Fort Ethan Allen, Vt., to examine three regiments of cavalry, stationed at that post. These were all enlisted men of the Regular Army. Here the examinations were carried on indoors and under ideal conditions, as each examiner had a private examining room for his own use. The men were examined in groups of five, ten or twenty each, depending on the size of the room and the desire of the examiner. It was at this place and under these conditions that in one day, one of us examined 163 men, while another examined 162, which was our record day and showed us clearly that 100 examinations a day should be the high limit for each physician, if the examination is to be of much value. The results we obtained in this camp are given in Table 3.

TABLE 3.—EXAMINATIONS AT FORT ETHAN ALLEN

	Number.	Per Cent.
Men examined	4,042	
Tuberculous cases	18	0.44
Rejected for tuberculosis	12	0.29
Recommended for special service	0	
Men with healed lesions, passed for active service	6	0.15
"Hold-ups"	333	8.20
"Hold-ups" who presented abnormal signs with negative history	49	1.20
Men presenting positive history with normal signs	229	5.60
Men presenting positive history, abnormal signs	55	1.30
Men with enlarged cervical glands or scars	10	0.24
Men presenting evidence of old empyema	5	0.12

THE SECOND PLATTSBURG RESERVE OFFICERS' TRAINING CAMP

At the second Plattsburg reserve officers' training camp, our board again consisted of three members, Major (then Captain) A. P. Francine, Major (then Lieutenant) J. W. Price and myself. Our duties this time were to examine the hearts of the entire command, as well as the lungs. This work has already been reported,[1] but as the report dealt more fully with the cardiovascular part of the work, I will merely mention again a few points about the lung examinations. Here we found the working conditions very favorable, as each of us had a separate room in which to work. The physical type of the men we examined was again excellent, but on the whole not as good as the first Plattsburg camp, and, as will be seen, the percentage of tuberculosis was nearly twice as great. The details of the examination will be found in the article mentioned,[1] so I need not reiterate them here. For the sake of comparison I will give our findings. The most marked difference from our previous examinations was in the smaller number of "hold-ups." This, I think, was largely due to the fact that we were beginning to doubt the value of history taking, and, I believe, the sergeant who asked the men the questions, must have overheard us discussing this point, and become a bit doubtful himself as to the use of asking every man personally the four questions, for one day I happened into the large room, where the men collected before coming to us, just as the sergeant called them all to attention and asked, at the top of his voice, if any one of them had had tuberculosis in the family, or had had pleurisy, spat blood, or had a cough

1. Francine, A. P.; Price, J. W., and Trudeau, F. B.: Cardiovascular Lesions and Tuberculosis, THE JOURNAL A. M. A., Dec. 22, 1917, p. 2110.

for a month or more. One can easily see why this method would not be particularly conducive to bringing out positive histories, or, as we used to term them, "history hold-ups," especially when these men were all working for commissions, and were very reticent about answering any of these questions in the affirmative,

TABLE 4.—EXAMINATIONS AT SECOND PLATTSBURG RESERVE OFFICERS' TRAINING CAMP

	Reserve Officers.		Regulars.	
	No.	Per Cent.	No.	Per Cent.
Men examined	3,134		584	
Tuberculous cases	13	0.41	7	1.20
Rejected for tuberculosis	8	0.25	5	0.85
Recommended for special service	2	0.06	1	0.17
Men with healed lesions passed for active service	3	0.095	1	0.17
"Hold-ups"	104	3.30	42	7.20
"Hold-ups" who presented abnormal signs with negative history	42	1.30	8	1.30
Men presenting positive history with normal signs	51	1.60	29	4.90
Men presenting positive history with abnormal signs	11	0.35	5	0.85
Men presenting enlarged cervical glands or scars	1	0.03	1	0.17
Men presenting evidence of old empyema	4	0.12	0	

even when questioned personally by one of us. Besides examining the prospective officers at this camp, we examined 584 regulars. The results are given in Table 4.

CAMP DEVENS, AYER, MASS.

At Camp Devens conditions were entirely different from any of the camps in which we had worked, chiefly on account of the far greater number of men to be examined, and secondly, it was the first experience for most of us in one of the large Army cantonments. The examining board consisted of fifteen members and was divided into five smaller boards of three members each. As, I believe, our final results are to be published by our president, Major Joseph Pratt, I will confine my remarks to a summary of the findings of my own local board, composed of two other members: Major (then Captain) T. J. Abbott and Capt. (then Lieutenant) E. P. Eglee. As will be seen, the greater part of our work was done among the drafted men of the National Army. We also had

TABLE 5.—EXAMINATIONS AT CAMP DEVENS

	National Army.		Regular Army.	
	No.	Per Cent.	No.	Per Cent.
Men examined	4,167		1,455	
Tuberculous cases	34	.81	8	.55
Men rejected for tuberculosis	24	.57	8	.55
Men recommended for special service	1	.02	0	
Men with healed lesions passed for active service	9	.21	0	

occasion to examine the One Hundred and Twenty-Fifth Regiment of Engineers, who were practically all enlisted men of the Regular Army, and happened to be stationed at this camp. During these examinations a written history of from eight to ten questions was taken of every man in camp. I am unable to use as much data in summing up our results at Devens as I have used in the summary of the work at the other camps, but the essentials are given in Table 5.

TABLE 6.—SUMMARY

	Prospective Officers.		Regulars.		Nat. Army.		Total.	
	No.	P.C.	No.	P.C.	No.	P.C.	No.	P.C.
Men examined	7,589		6,081		4,167		17,837	
Tuberculous cases	23	.30	33	.54	34	.81	90	.50
Men rejected for tuberculosis	13	.17	25	.41	24	.57	62	.34
Men recommended for special service	6	.07	1	.01	1	.02	8	.04
Men passed for active service	4	.05	7	.11	9	.21	20	.11

CONCLUSIONS

1. A tuberculosis examining board should not work more than six hours a day.

2. The number of pulmonary examinations a day for each medical officer should be at least seventy-five but not exceed 100.

3. The routine taking of histories in this work was of little value.

4. The one most important procedure in the pulmonary examination is auscultation for râles after cough, performed preferably and if possible at the end of expiration.

5. The disability board should consist of three members, the president of the examining board and two others chosen by him from the members of the board. This board should have final disposition of all lung cases referred to it.

6. The average incidence of tuberculosis among the various branches of the Army which we studied is 0.5 per cent. The percentage is slightly lower than this in the reserve officers and slightly higher in the National Army; while our Regular Army men maintain just this average.

OBSERVATIONS OF A TUBERCULOSIS EXAMINER IN THE ARMY

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The tuberculosis examining board effected an organization in this cantonment during the latter part of November, 1917, and has since been engaged in the examination for pulmonary tuberculosis of all drafted men reporting to this camp. The work of a tuberculosis examining board is in no way connected with the activities of the base hospital. It is essentially a camp board making a field survey for tuberculosis so far as it concerns the men assigned to the depot brigade or the several organizations within the division. The work of a tuberculosis examining board, omitting the details incident to a tuberculosis survey, may be compared with that of a medical officer holding a sick call when it is necessary to examine hurriedly a large number of men, collecting those that need hospital attention.. Prior to the present method of discharging all drafted men on Form 1010 who are physically incapacitated for service on account of active manifest tuberculosis, these men were referred to a disability board for discharge, the tuberculosis examining board reporting on the number and percentage of pulmonary defects referred to the disability board. Those cases of lung defects and lesions of an unimportant nature from a clinical standpoint, yet incipient, were not reported to the disability board, the services of these men being of value to the government, but were taken into account as percentage of tuberculosis found, Class A incipient, closed.

Incipient pulmonary tuberculosis has been defined as an infiltration limited to the apex of one or both lungs or a small part of one lobe; with no tuberculous complications; with slight or no constitutional symptoms, including gastric or intestinal disturbance, rapid loss of weight and slight or no elevation of temperature or acceleration of pulse at any time during the twenty-four hours. Expectoration is usually small in amount or absent, and tubercle bacilli may or may not

be present. A further classification according to symptoms was found practicable and adopted.

Incipient A would depict a lesion with symptoms found in the present incipient stage; incipient B, an incipient lesion with symptoms of the present moderately advanced stage; incipient C, an incipient lesion with symptoms of the present far advanced stage. This classification was not a matter of official record, but merely statistical for the information of the president of the tuberculosis board.

In military practice it is of the greatest importance to determine promptly whether or not tuberculosis is present, and to hold to the service all men not presenting evidence of the disease on chest examination. Examiners without the necessary clinical experience may misinterpret physical signs and make unnecessary rejections for too slight causes. The healed and quiescent lesion in the absence of moisture may present difficulties in diagnosis that experience alone may enable us to overcome. Again, the diagnosis of incipient pulmonary tuberculosis in the absence of râles and confined to the apex of an upper lobe is not always an easy task, especially when there is no constitutional disturbance. It would not be amiss in Army work to establish certain standards to prevent unnecessary rejections for causes that would not warrant rejection when based on misinterpreted physical signs.

Long before there is softening of a tuberculous process changes in breath sounds occur.

We study the quality and strength and note the relations between inspiration and expiration, with special reference to their nature and duration. The production at the apex in incipient tuberculosis is a not clear, hoarse, vesicular sound of vibratory character first called to our attention by Bandlier, its production often depending on a soft swelling of the finer air passages (Detweiler) or small isolated rhonci not yet accompanied by secretion in the bronchioles (Sahli) or on the air in consequence of the existence of small, airless nodules entering the alveoli by fits and starts (Turban). The cogwheel breathing, so early heard, occurs in infiltrated areas, nearly always accompanied by vesicular breathing of an exaggerated nature. When confined to one apex, it is of significance.

It is rather remarkable to what extent these early adventitious sounds may be elicited in crowded and at times very noisy examining rooms.

It is not an untenable theory that the tuberculous process begins at the hilum in childhood and is disseminated throughout the lung as a peribronchial process, often limited permanently to the deep lung, reaching the periphery when there is a failure of immunity to tuberculosis, and producing the disease in a clinical and manifest form. In these cases the clinical manifestations of tuberculosis appear at the surface of the upper lobes.

A soldier with tuberculosis is a distinct liability. Colonel Bushnell has pointed out that tuberculosis examiners owe it as their duty to the government to exclude from the Army men who will cripple it in effectiveness and swell the pension list. At the same time they are expected to hold to the service men not afflicted with manifest disability. Two classes of men, as stated by Colonel Bushnell and frequently observed by examining surgeons, will present themselves to the examining board: those who wish to serve, yet suspect that they have tuberculosis, endeavoring to conceal their past history and present symptoms, and those who desire exemption, who will give a history and claim symptoms tending to mislead the examiner. It would, indeed, make for inefficiency were not the examinations of drafted men confined to objective facts and physical diagnosis. Statements of applicants must be supported by physical signs, but otherwise not given weight. We fully realize the need for haste in the present emergency, and the consequent practice of percussion and auscultation in unfavorable surroundings; yet notwithstanding all this, cases of well-marked manifest tuberculosis are detected in practically every instance. Quiescent and healed lesions not far below the clavicle are the types of pulmonary tuberculosis most frequently overlooked by surgeons on examining boards, reactivation later occurring.

The first report to the Surgeon-General on the tuberculosis survey in this camp covered the examination of 21,700 men. The total number of cases of tuberculosis found was 204, or 0.94 per cent.; cases recommended for discharge from the service, 138, or 0.636 per cent.; incipient pulmonary tuberculosis, Class A, 66, or 0.304 per cent. In the second increment, 5,396 men were examined. The percentage of rejections from the service was 0.685. In the third increment, 6,359 men were examined; the percentage of rejections was 0.519. In the fourth increment, 9,457 men were examined; the percentage of rejections was 0.327. In the fifth increment, 15,410 men were examined; the percentage of rejections was 0.24. A total of 58,322 men were examined. Undoubtedly the decreasing percentage of rejections was due in large measure to a rise in the physical standards demanded by the local boards, and the knowledge that was soon acquired that active and manifest pulmonary tuberculosis would be detected by the Army surgeons and promptly rejected. In considering the fact that all men examined by the tuberculosis board had previously been examined by reputable and well qualified physicians, and in many instances by distinguished specialists, this seemingly low average of rejections is not normal.

To the casual observer an analysis of these percentage tables might lead him to believe that many cases of tuberculosis had escaped detection. As a matter of fact, the records of the clearing station at Camp Grant and the laboratory at the base hospital show only twenty-three positive sputum reports since the organization of the tuberculosis examining board the latter part of November, a comparatively small percentage to the number of chest examinations made, and this notwithstanding the fact that considerable time had elapsed from the date of the primary examination to the departure of the soldier from the camp. With this small percentage of tuberculosis, it is evident that the healed quiescent lesion did not reactivate to an appreciable extent if overlooked, notwithstanding the fact that we are not as yet able to establish any standards of resistance to a given amount of tuberculous infection. The experience of the examiner and the personal equation must enter largely into the situation. Practical experience as a clinician and large experience as an examiner of soldiers are essential to the solution of this problem.

TUBERCULOSIS IN FRANCE

Major Edouard Rist has shown that at the clearing stations of the sixth French army where laboratory and sputum examinations were made, where the roentgen ray was established, and a nose and throat expert

employed, the number of discharges on account of tuberculosis was greatly reduced. Of the first 1,000 cases examined for the diagnosis of tuberculosis, only 193 had active tuberculosis. These were men who had served at the front, a percentage of less than 20 of the previously diagnosticated cases. During the first year of the war, no less than 86,000 men were discharged from the French army on account of pulmonary tuberculosis. These figures spread alarm in France and the Allied countries, and especially in the United States. The impression prevailed that the whole French nation was permeated with tuberculosis and was sure to die from it if immediate measures were not taken for its prevention. A phthisiophobia was created in this country which might well account for the exceedingly high percentage of rejections from our army for pulmonary tuberculosis until the Adjutant-General finally issued an order requiring ocular demonstration of the tubercle bacillus as confirmatory evidence of the disease before rejection of soldiers for pulmonary tuberculosis could be accomplished, once enlisted, and then only of their own free will and accord.

Returning to the French army, all men in the war zone with a diagnosis of tuberculosis were sent to a clearing station where they were kept for a week and thoroughly examined. The result of this procedure was that several hundred soldiers were sent back to duty at the front who, if there had been no clearing station for such cases, would have been sent to the base hospital with a diagnosis of tuberculosis, would have been kept for months in the interior, and the greater part would have been discharged finally from the military service. As a matter of fact, between 80 and 90 per cent. of these supposedly tuberculous men were not tuberculous at all.

Tuberculosis examining boards in our army should profit by the mistakes of our allies, and we find this largely an incentive for a greater conservatism and careful study on recall of all diagnosed as tuberculous by examining surgeons on general boards. It is fair to assume that tuberculosis will not break out in the American Expeditionary Forces to the extent that it has in other armies, on account of the thorough examination and sifting out of consumptives at training camps. Surgeon-General Gorgas says, "I consider that prevention of tuberculosis remains the most important health problem in the country, in spite of all the work that has been done." Tuberculosis continues to present more complex social and economic problems than any other known disease, causing the greatest amount of suffering and dependence.

TUBERCULOSIS IN CHICAGO[1]

At a recent meeting of the American Public Health Association at Washington, D. C., statistics incident to a survey that I made showing the prevalence of tuberculosis and its social and economic conditions in the city of Chicago were presented. This tuberculosis survey included a district of 8 square miles with an estimated population of 371,259, the total number of persons examined being 165,700. Of this number 14,282, or 28.6 per cent., were found to be tuberculous. An analysis of 6,610 cases classified as first, second or third stage cases shows that 4,407, or 61 per cent., were incipient, 2,240, or 33 per cent., moderately advanced, and 323, or 4.8 per cent., far advanced.

1. Results of this tuberculosis survey, presented in a paper read by Dr. John Dill Robertson, Commissioner of Health, Chicago.

It is from this and other similar environment that large quotas of men are supplied to the National Army. It is of interest, therefore, to note more in detail just what was found in the examination of employees of large business houses. In one candy factory there were more than 1,000 people employed. Of this number 698 were examined, and 100, or 14 per cent., were found to be tuberculous. This factory distributes its products over almost the entire civilized world. Examination was made of 1,514 employees of the U. S. government in the Chicago postoffice, and seventy, or 4.6 per cent., were found to be suffering from tuberculosis. Many of the employees evaded examination for fear of losing their positions if found tuberculous. The Chicago Telephone Company showed forty-nine cases in 520 examined, or 9.4 per cent. The employees of every restaurant and hotel, including the very best in the city, showed from 8 to 20 per cent. suffering from easily detected tuberculosis. The Cook County jail is old and poorly ventilated, with no sunlight penetrating to 99 per cent. of the cells, which are cement cubicles with iron grating doors. Out of 427 regular inmates examined and 317 transients, 102 of the regular inmates were diagnosed tuberculous and 100 cases were found among the transients. All told, 27.1 per cent. of the population of the jail were tuberculous.

With millions of consumptives throughout the United States there is hardly a city, village or community free from the disease. We have all doubtless been infected since childhood, and we have bestowed on us an immunity against overwhelming infection, making us a less susceptible race than primeval man. Race immunity has handed down to us through successive generations a resistance to tuberculosis by recovery from the disease incident to mild infection, oft repeated.

METHODS OF ERADICATING TUBERCULOSIS

The methods of stamping out tuberculosis may be grouped under four headings:

1. Removal of those predisposing factors tending to lower the physiologic resistance of the individual, that is, bad housing, overcrowded, poorly lighted and badly ventilated tenements, inadequate and poor food supply, and insanitary conditions in general.

2. Removal of foci of infection, by hospitalization and segregation of open cases so far as practicable.

3. Effecting a cure of incipient closed cases at a time when this is possible and before there is softening of lung tissue.

4. Eradication of bovine tuberculosis and more widespread knowledge of the dangers resulting from the consumption of meat and milk from tuberculous cattle, notwithstanding the fact that the bovine bacillus is less virulent than the human bacillus for man.

Chemical Manufacture in Uruguay.—In 1915, when on account of the war, the scarcity of chemicals began to be felt in Uruguay, a project for making chemicals was revived and their manufacture begun on a commercial scale. This was the outcome of a recommendation by Dr. Latham Clarke, an American specialist in charge of the National Institute of Industry at Montevideo in 1913. At that time, apparatus was purchased in the United States but the work was postponed. At present, a large number of chemicals are made, including alcohol, ammonia, nitrocellulose, benzene, nitrobenzene, sodium bicarbonate and carbonate, ether, potassium products, barium and sodium sulphate, chloroform, sodium benzoate, iodoform, hexamethylenamin, glycerin, hydrogen peroxid, silver nitrate, salicylic acid, acetylsalicylic acid, creolin and acetone.

THE STERILIZATION OF WOOLEN BLANKETS AND UNIFORMS

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The prevention and control of contagious diseases in Army cantonments and base hospitals is a complex problem which requires special measures to be worked out in sufficient detail to result, so far as possible, in automatic execution.

Contact infection, which includes hand-to-mouth infection and infection by the respiratory route, is accepted as being fundamentally important in the prophylaxis of contagions. A scheme, to be effective, should provide for measures involving early diagnosis, prevention of cross-infection in ambulances en route to the base hospital, rigid examination of patients in the receiving ward, the use of throat cultures to determine proper grouping of patients in wards, development of the cubicle system on the principle of isolation in each case, the wearing of face masks, and rigid ward discipline to develop and maintain the so-called aseptic technic. Important among preventive measures is proper sterilization of woolen blankets and uniforms.

The sterilizer issued the base hospital has proved satisfactory in the routine sterilization of cotton goods, surgical dressings and gowns, but destructive to woolen goods. It was found necessary, therefore, either to dispense with the routine sterilization of woolen goods or to modify the method used in sterilization of cotton goods, which consisted of sterilizing with from 12 to 15 pounds steam pressure (from 242 to 250 F.) for from ten to thirty minutes.

Numerous experiments and modifications demonstrated that, in the sterilization of woolen goods, certain precautions must be observed, (1) to produce effective sterilization; (2) to avoid damage to woolen fibers, and (3) to prevent shrinkage. These precautions should be discussed.

STERILIZATION

Bacteriologic cultures of pneumococcus, streptococcus, staphylococcus, influenza bacillus, pyocyaneus and anthrax spores were effectively sterilized with 12 pounds of steam (242 F.) for ten minutes, or at atmospheric pressure (212 F.) for one hour, if the following precautions were taken:

1. That a vacuum of from 15 to 20 inches be established in the chamber of the sterilizer before the introduction of steam.

Experimental Proof.—Without initial vacuum, staphylococci and anthrax spores placed in the center of a bundle of blankets were not killed. With initial vacuum, all organisms were killed.

2. That the sterilizer be not overfilled.

Experimental Proof.—When the sterilizer was tightly filled, anthrax spores in the center of the sterilizer were not killed by 15 pounds of steam in fifteen minutes. When the woolen blankets and uniforms were loosely placed on trays of the sterilizer, all anthrax spores and other organisms were killed by 12 pounds pressure in ten minutes.

DESTRUCTION OF WOOLEN GOODS

The length of time woolen goods are exposed to heat is equally important to the degree of heat used (within the limits of 212 and 242 F.)

Experimental Proof.—1. No damage to woolen goods resulted when subjected to steam at atmospheric pressure (212 F.) for one hour. 2. No damage resulted when woolen goods were subjected to 12 pounds pressure (242 F.) for ten or twelve minutes. 3. If exposed for a longer time, even at a lower temperature, slight or severe damage resulted, as shown by the following test:

Blankets subjected to 6 pounds pressure (230 F.) for thirty minutes evinced abnormal dryness, increased friability and loss of vitality of fibers and texture.

SHRINKAGE

Sudden change of temperature is the cause of shrinkage.

Experimental Proof.—1. Blankets and two olive drab coats, treated only once, shrank when, at the end of the sterilization, the sterilizer door was thrown open to allow rapid cooling. The blankets lost one-half inch in length and breadth and the olive drab coats lost from one-fourth to one-half inch in the collar. 2. A blanket was put through the sterilizing process eight times without shrinkage when attention was given to avoidance of sudden change of temperature by opening the sterilizer door only 4 inches for ten minutes.

COMMENT

The sterilizer issued to this base hospital was manufactured by the American Sterilizer Company and given the Serial No. 10482. As indicated above, blankets or uniforms should be placed loosely on the wire trays in the sterilizer. Fifty uniforms and 150 blankets, respectively, represent its maximum capacity in one sterilization. The capacity of the sterilizer is sufficient to meet the demands of this base hospital which has averaged from 1,000 to 2,100 patients during the past several months. Wrinkling of uniforms is avoided by the use of hangers. This reduces the capacity of the sterilizer to twenty-five uniforms.

For several months past, routine sterilization of all clothing except shoes, worn by patients with contagious diseases, has been accomplished before being sent to the receiving ward for storage. All blankets and bedclothing have likewise been sterilized immediately after a patient that has recovered from a contagious disease is discharged from the hospital or transferred to another ward. Early in our experience the atmospheric pressure method was preferred as it theoretically offered a greater margin of safety as to preservation of valuable property. The past five weeks, however, since time exposure has proved more important than the degree of heat used (within limits of 212 and 242 F.), the shorter or pressure method has been adopted and found entirely satisfactory if conducted under reasonably careful observation.

SUMMARY

The following procedures effectively sterilize woolen goods without deterioration or shrinkage:

1. The woolen blankets or uniforms are placed on hangers or loosely on the trays in the sterilizer.

2. Sixty pounds of steam is introduced into the outer jacket of the sterilizer to prevent subsequent condensation of steam within the sterilizing chamber.

3. A vacuum of from 15 to 20 inches is created in the sterilizer chamber to facilitate penetration of the clothing by steam.

4. Sterilization is performed with either (*a*) 0 pounds of steam for one hour, designated as the atmospheric pressure method, or (*b*) 12 pounds of steam for ten minutes, designated as the pressure method.

5. Again a vacuum of from 15 to 20 inches is produced to facilitate drying.

6. The door of the sterilizer is opened about 4 inches for ten minutes to allow gradual cooling of the contents of the sterilizer.

Therapeutics

HEATSTROKE; INSOLATION

The fact that the treatment of heatstroke is frequently unsatisfactory and the outcome frequently fatal is an excuse for repeatedly outlining our knowledge of this condition. Although sunstroke is perhaps more serious and more fatal than heat prostration, the latter not only may be fatal, but is even more likely to cause prolonged disability. With sunstroke the victim may become suddenly unconscious and die within a few hours or even minutes. He may not come out of the comatose condition, or he may die with evidence of heart weakness. He may have convulsions, and if he is not comatose, he may complain of dizziness, nausea, headache and disturbed vision; the pulse is rapid, and the temperature may be exceedingly high. In heat prostration the symptoms are those of shock, with weak pulse, subnormal temperature, clammy perspiration and heart failure. There may be nausea and vomiting.

DIAGNOSIS

A patient found comatose, and having been exposed to intense heat, must have his condition diagnosed from many other serious conditions that cause coma or convulsions. An epileptic convulsion, with coma, or several epileptic convulsions and a comatose condition, may be difficult to differentiate from heatstroke, in a patient unknown to the physician. The most important immediate distinction is the high temperature of the sunstroke as against a moderately increased temperature in the epileptic. The epileptic will be very cyanosed at first, but his color soon improves. A patient suffering from alcoholic stupor can generally be aroused, and the temperature is either normal or subnormal. The odor of alcohol on the breath does not preclude any other cause for the coma; in other words, the ambulance physician and the police surgeon should be very careful not to transport a stupid patient to jail because he smells of alcohol. Head injuries should always be sought for whenever a patient is found comatose. The temperature is likely to be subnormal. There may be symptoms of paralysis of one side or the other of the body. In coma from apoplexy or from injury to the head, with hemorrhage, there is stertorous breathing, with a temperature normal or a little above normal; the pupils are likely to be dilated, or one may be dilated even if the other is not; and the difference in the flexibility or mobility of the extremities will generally show, even in coma, that there is paralysis. Coma from uremic poisoning will show no great rise of temperature, if any, and there may be repeated convulsions. In diabetic coma the temperature will also be about normal; the breath may give the peculiar sweetish odor.

Even if the temperature is high and sunstroke is suspected, in every case the patient should be catheterized and the urine quickly examined for sugar and albumin.

In the coma of opium poisoning the pupils are small and pin-point, the breathing very slow, the pulse generally slow and full, and the temperature normal or subnormal. In chloral poisoning there is subnormal temperature, a weak pulse, the pupils may be slightly dilated, and the condition is that of collapse. These are only brief suggestions, to urge a more careful study of every person found comatose.

Gauss and Meyer[1] studied 158 patients who suffered from heatstroke and were brought to the Cook County Hospital, Chicago. The seriousness of this affliction is shown by a death rate of 44.3 per cent. in these cases. It is interesting to note that Gauss and Meyer found that most of the patients gave a history of alcoholism, in greater or less degree. Most of the patients were thinly, that is, properly clothed for the summer season; most of the patients ate meat daily; a few ate meat three times a day. Some patients had prodromal symptoms of weariness for several days, or complained of headache and dizziness and great thirst, and some nausea and vomiting. Some patients had no prodrome whatever. When there was one or more days of more or less disturbing conditions or debility, the temperature was found not to be high; that is, these were more similar to heat prostration. When there was a very short period of symptoms of sunstroke, the temperature was generally, but not always found to be high. In some heat prostrations there was as low a temperature as 94, while in some cases of sunstroke the patients showed as high a temperature as 114. The pulse rate was generally proportional to the temperature. Most of the comatose patients had involuntary bowel movements.

As emphasized above, the urine of all stupid patients should be examined. Gauss and Meyer found that of twenty-five patients whose urine was examined on the second day of illness, all showed hyaline and granular casts, and some showed albumin. Of the 158 patients, 129 were comatose when admitted, and fifty-eight died without regaining consciousness; ten had relapses after gaining consciousness and died. Of those patients who recovered, the time of return to normal temperature varied up to three days.

It has long been noticed that a patient who has once had an attack of thermic fever readily has a recurrence with much less exposure to the sun. On the other hand, it has been found that a healthy white man can become acclimated to most intense tropical heat, and Shaklee[2] finds that the amount of sweating necessary to keep the temperature of the white man normal in a tropical climate is not excessive, even when he is doing physical work. He does find it essential, however, that the white man should have had for some little time a suitable diet, and should take up his work in the sun gradually, until he is able to do the full amount required.

Gradwohl and Schisler[3] have studied thermic fever by laboratory methods, and find that insolation occurs when heat accumulates in the body and when the body does not excrete "its metabolic end-products, such as

1. Gauss, H., and Meyer, K. A.: Am. Jour. Med. Sc., 1917, **154**, 554.
2. Shaklee, A. O.: Philippine Jour. Sc. (B), 1917, **12**, 1.
3. Gradwohl, R. B. H., and Schisler, E.: Am. Jour. Med. Sc., 1917, **154**, 407.

urea, nitrogen, creatinin and uric acid." In other words, insolation is an autointoxication due to heat retention and the retention of too large an amount of these substances. The condition in heatstroke is analogous to uremia. These investigators also found that there was a high retention of nonprotein nitrogen constituents in the blood, as occurs in renal insufficiency. They found that this study of the nonprotein nitrogen of the blood was of prognostic value, as when the nonprotein nitrogen of the blood was high, even if the symptoms were not serious, the patients died. On the other hand, if the symptoms were seemingly serious and the nonprotein nitrogen retention was low, the patient did not die. They also found that there was increased creatinin in the blood to the danger point.

In hospital patients that live more than a few hours, this blood examination should be made to ascertain, by a large number of statistics, whether the kidneys are really always at fault in serious sunstroke.

Mayer[4] believes that deaths from high temperature may be due to accumulation of acid in the tissues. If this is true, it would be an indication for rectal injection, or perhaps venous injection, of alkalis.

Postmortems on patients who have died of sunstroke show congestion and cloudy swelling of the internal organs, especially of the heart, liver and kidneys; there may be edema of the brain and lungs; and there may be small hemorrhages found in different parts of the body. The blood is likely to be fluid and have a diminished coagulability. McKenzie and LeCount[5] describe the findings in thirty-seven necropsies performed on patients who have died of heatstroke, and state that the cerebrospinal fluid in all cases is clear, colorless, and usually increased in amount. They found edema of the brain alone was present in twenty-two cases, edema of the leptomeninges alone in nine cases, and edema of both the brain and leptomeninges in four cases.

They urge the advisability of having large amounts of water drunk by all persons subjected to or working in intense heat.

TREATMENT

In the routine treatment of sunstroke with high temperature, if the temperature is at all high, the patient is generally put into a tub of cold water. The head is supported, a thermometer is placed in the rectum, ice is added to the water, and the patient's body is vigorously rubbed. It is generally noted that the temperature may stay more or less stationary and then fall rapidly; therefore, if the thermometer in the rectum—which should be read every few minutes—shows a fall to 103 or perhaps 102, the patient must be immediately taken out of the tub, as the temperature is likely to fall rapidly, even to subnormal. If the temperature goes below normal, the patient should be surrounded with hot water bags. During the tubbing treatment of course an ice cap is kept on the head.

This ice tubbing treatment has been handed down from book to book and from hospital to hospital. As many times noted, and also vigorously recommended, the failing heart, after the severe measures used to reduce the temperature, is stimulated with strychnin, digitalis, strophanthin, caffein, etc., by the usual methods. The question almost asks itself whether or not this treatment is too severe. One would almost wonder if the death rate would be much more if nothing at all was done to the patient. Less shock would be caused, and consequently less heart failure, if the cold was applied by affusion or by ice coils to the abdomen and an ice cap to the head and perhaps a hot water bag to the feet. Or iced cloths might be wrapped about the patient and changed every few minutes.

Baruch[6] indicates that the mortality in sunstroke is much reduced if affusions of cold water are used instead of tubbing. Sprinkling the body with cold water and then directing an electric fan over the patient will cause rapid evaporation and cooling. Is it possible that it would be too far a cry to try, as has been suggested, warm baths, in sunstroke, to promote perspiration (nature's method of reducing temperature) which is absolutely in abeyance in the thermic fever patient? Rectal injections of ice water are always of benefit, as well as the crunching and swallowing of cracked ice, if the patient is not stupid.

With the pathologic findings, and the chemical findings described above, showing that the kidneys are always in trouble and that the eliminaion of body poisons is at a low ebb, severe ice applications are extremely questionable; they simply increase the kidney congestion that has already started.

When the patient is flushed, full blooded, and the pulse is bounding and full, venesection would seem indicated to relieve the pressure on the cerebral vessels; and, as necropsy often shows edema of various parts of the brain, spinal puncture should be considered.

If the patient recovers consciousness, alkaline drinks would seem advisable, as in any serious condition like this acidosis readily adds its quota to the seriousness and danger of the symptoms. For many days the food should be cereals and starches, with plenty of water, and no meat.

The treatment of heat prostration or heat exhaustion is that of shock; gentle circulatory stimulation, body warmth, the coolest general atmosphere possible promoted by electric fans, absolute rest and quiet, and a prolonged convalescence, with tonics and good food.

4. Mayer, A. G.: Am. Jour. Physiol., 1917, 44, 581.
5. McKenzie, Pierce, and LeCount, E. R.: Heat Stroke, THE JOURNAL A. M. A., July 27, 1918, p. 260.
6. Baruch, Simon: The Principles and Practice of Hydrotherapy, Ed. 3, New York, William Wood & Co., 1908, p. 384.

Professional Ethics in Cuba.—The *Revista de Medicina y Cirugia* of Havana relates that the Medical Press Association of Cuba has decided to undertake a tenacious campaign against quackery, quack advertising and quack practices, and against acts committed by physicians that do not conform to professional ethics. It says, "Notwithstanding the resolutions voted in recent national representative gatherings, the evils in the medical corps are increasing instead of diminishing. It is actually scandalous that, in the very capital of the nation, individuals with university degrees are serving as protectors for animal-magnetism healers, and that in some laboratory and other institutes—perhaps behind the back of their medical directors—efforts are made to get the clients away from physicians who send their patients there exclusively for some laboratory examination." Drs. Aragon, Jr., Montoro and Arteaga brought up the matter at the meeting of the Medical Press Association. Our exchange adds, "It is hoped that something can be done, backed by the authority of the Public Health Service and the ministry for Public Instruction, to fight these elements which show such contempt for professional ethics and their university degree. Now that the first steps have been taken, let the work be continued by the Academia de Medicina, the Colegio Medico and other professional organizations."

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SATURDAY, SEPTEMBER 7, 1918

THE DIETARY HABITS OF AMERICAN COLLEGE GIRLS

In a highly important and as yet too little known investigation of the food consumption of more than 350 boys, ranging in age from 13½ to an average of 16 years, in the upper forms in a large private boarding school, Gephart[1] has furnished the basis for a new understanding of the dietary needs of youth. In the past it has been taught that the nutritive requirement of the adolescent boy or girl is a fraction of that demanded by the adult, the proportion depending in a measure on the relative size of the individual. Du Bois has shown that boys just before puberty have a high metabolism; indeed, their basal metabolism as measured by the heat production during sleep or complete rest without food, may be fully 25 per cent. above that of the adult. Gephart's statistics give evidence that the growing, athletic boys whom he observed were not satisfied with the conventional 3,000 calories of energy daily assigned to the average adult. It was shown that they not only took 4,350 calories daily at the table, but also bought 650 additional calories in food at a neighboring store, the principal item being chocolate. Lusk[2] makes the comment that the 5,000 calories are half as much again as a farmer at work would require. These data explain the ravenous appetite of boys. Lack of appreciation of this factor or lack of provision for it are the probable causes of much of the undernutrition seen in children of school age. In any event, those entrusted with the distribution of advice about the ration allowances of children in war time, when economy and patriotism tend to go together, ought to bear in mind the evident uniquely large needs of the adolescent organism.

Something somewhat comparable, perhaps, though far smaller in absolute figures, may be detected in the data relating to the food consumption in girls' colleges. A dietary survey completed during the past year in one of the dormitories of Vassar College by Macleod and Griggs[3] included nearly a hundred students whose average age was 19.4 years, height, 5 feet 4 inches, and weight, 123.9 pounds. Whether this may be regarded as definitely past the age of growth need not be debated here. The essential fact is that the food consumption in this group, too, was found to be larger than current assumptions had led the investigators to expect. It amounted to about 2,700 calories per person per day, aside from the additional food with which at least 65 per cent. of these girls supplement their college meals. Their supplementary food was usually sugar in some form, candies, cakes or ice cream. It is a question in the minds of Macleod and Griggs whether this is due simply to the taste for sweets which is instinctive in all young persons or is in response to a physiologic need. Although it is not practicable to determine the average value in energy of the extra food thus consumed, it was by no means inconsiderable. It is recorded that in certain instances the girls must have averaged well over 1,500 calories apiece in addition to that which they obtained at their regular meals.

A few further facts elicited in the Vassar study are of incidental interest. The inedible waste averaged 15.6 per cent., the edible waste being decidedly less. The average daily intake of protein per person was estimated at 99.6 gm., or nearly 15 per cent. of the total fuel value, surely no unduly low figure. In February, 1917, when these figures were collected, the cost per meal of food alone was found to average 14 cents, the cost of food, preparation and service being 18 cents. Meat required more than 40 per cent. of this expenditure, dairy products somewhat less than one third, and the other food types smaller proportions. Such, at any rate, are the food habits of a representative group of college girls, quite aside from the question as to whether they seem well justified when evaluated according to the views now concurred in by students of nutrition.

1. Gephart, F. C.: Boston Med. and Surg. Jour., 1917, **176**, 17.
2. Lusk, Graham: The Science of Nutrition, Edition 3, New York, 1917, p. 559.
3. Macleod, Annie L., and Griggs, Mary A.: Dietary Study at Vassar College, Jour. Home Economics, 1918, **10**, 97.

INFANT MORTALITY STATISTICS

The difficulties both of securing and of interpreting data on infant mortality are illustrated in a recent article on the infant mortality studies made by the Children's Bureau.[1] As is well known to those interested in vital statistics, satisfactory birth registration anywhere in the United States is a recent development, and it is still true that birth records in many places are so defective as to be unavailable for exact studies. One of the first objects, therefore, of the investigation made in eight cities by the Children's Bureau has been to secure a record of all infants born within the year in the community selected for study. Even without a systematic canvass it was found possible by the use of neighborhood inquiry and baptismal records to add greatly to the number registered. In Saginaw, Mich.,

1. Woodbury, R. M.: Quarterly Publications of the American Statistical Association, 1918, **16**, 30.

for example, more than 13 per cent. (149) were added by this method to the number (1,113) already on record. It is obvious from the conditions revealed by these studies that still greater efforts should be made to secure the accurate registration of births throughout the United States.

Although this is a time when human life is being lavishly spent for the high ideals of our country, it is a time also when for the same reasons life should be conserved and strengthened at every possible point. There is good reason to believe that the mortality in the first year after birth can be materially reduced by the application of known principles and methods. In order, however, to make such application and to understand what it is accomplishing, it is essential that each community should maintain a system of birth registration and see that the system is made effective.

Among the cities in which infant mortality has been studied, Baltimore affords some particularly interesting results. The Baltimore figures include for the first time in such studies, we believe, a sufficiently large number of colored infants to permit the calculation of a mortality rate, the rate for white infants being 95.9, for colored, 158.6. In the same city, striking racial differences are recorded, similar to those observed elsewhere, the Jews having the low rate of 51.0 and the Poles the high rate of 163.2. The rates for the artificially fed are from three to nine times those for breast-fed infants. Examination of the influences of some other factors leads to suggestive, if not convincing, results. The tabulation of infant mortality rates by the father's earnings, and the statement that "the mortality rate of infants whose mothers were gainfully employed during the lifetime of the infant was about twice the average rate" obviously need further analysis before they can be considered very illuminating. The fact that the infant mortality rate is much higher when the father's earnings are less than $450 than when more than $1,850 might be due partly to a difference in inborn vitality, correlated with the father's earning power, partly to a difference in the proportion of breast-fed and bottle-fed infants in the two groups, and partly to a difference in the number of children or the interval between births or to other unspecified factors. It has never helped very much in the realms of biologic speculation to term a correlated character a "cause." A cat is not deaf because it has blue eyes. In like manner it is necessary to analyze the apparent effect of the gainful employment of the mother—possibly due merely to the necessity for artificial feeding—and of the apparent effect of the size of the family—possibly due merely to the lack of proper spacing of births. It is evident that in all such considerations the age and experience of the mother form a factor of prime importance. The problem of the factors entering into infant mortality is without doubt far too complex to be solved by any but expert mathematical handling, such as it is now receiving from the authorities of the Children's Bureau. The most essential part of this study, however, as of all vital phenomena, is the gathering of correct data.

THE DIPHTHERIA PROBLEM

Despite the fact that diphtheria antitoxin has proved to be a therapeutic remedy of great importance in the management of a disease which was among the first to derive curative benefits from modern immunologic investigations, the presence of diphtheria among us still presents a serious hygienic problem. In spite of the extensive use of small prophylactic doses of antitoxin, the morbidity and mortality from diphtheria remain surprisingly high and constant. The carrier problem has not been solved. An estimate based on figures obtained a few years ago from the registration area in the United States indicates that the yearly mortality from diphtheria in this country is more than 23,000, the morbidity presumably being ten times greater. Hence we can only reecho the need which Captain Zingher of the New York Department of Health has voiced for a practical and efficient method of active immunization that will protect the child and adult population.[1] Such protection, he adds, should be applied early in life, so that an efficient active immunity will be produced during that period when individuals are most susceptible and the disease causes the greatest mortality, that is, from 1 to 5 years of age. The protection of the infant derived from the mother is only temporary, lasting about six to nine months after birth.

Two factors, in particular, seem to point to the possibility of progress in the control of the diphtheria menace. A valuable clinical test of the existence of immunity is afforded by the carefully studied Schick reaction, while the use of the newer toxin-antitoxin mixtures seems to be successful in producing an active immunization. To the investigation and development of these diagnostic and immunizing procedures much credit is due to the Research Laboratory of the New York City Department of Health. Recommendations emanating from this source are deserving of careful consideration. In this spirit we refer to the insistence of the assistant director[1] that all infants below 12 and if possible below 18 months of age should—of course, with the consent of their parents—be actively immunized with appropriate doses of toxin-antitoxin, irrespective of the Shick tests that the infants may show at the time of immunization. Beyond this age the question of immunization should be guided by the Schick reaction.[2]

1. Zingher, Abraham: Active Immunization of Infants against Diphtheria, Am. Jour. Dis. Child., August, 1918, p. 83.
2. Practical details are given in Captain Zingher's paper referred to in Footnote 1.

The public program in this important matter is thus formulated: The active immunization against diphtheria should be carried out first of all by the private physicians in the different homes, where a majority of the infants can be reached. The toxin-antitoxin injections produce so little local or constitutional disturbance in young infants that the immunization at this early period of childhood seems peculiarly desirable. In large centers of population the milk stations, day nurseries, children's dispensaries and the infant and orphan asylums reach large groups of children of the age suitable for immunization. The children of preschool age found in kindergartens and those of school age should be tested first with the Schick reaction, and those giving a positive test actively immunized. Whether, the program continues, such procedures can be made compulsory in the schools will depend on the enlightenment of the community in which the work is to be carried out. Adults, especially those frequently or constantly exposed to diphtheria, such as physicians, nurses, orderlies and patients in contagious disease hospitals, should also be tested with the Shick reaction, and those giving a positive reaction actively immunized. This is, indeed, an ambitious plan, but it has a promising aspect of progress from the point of view of the modern sanitarian.

Current Comment

THE SELECTIVE SERVICE LAW AND PHYSICIANS

Many letters have been received concerning the relation of the new Selective Service Law to physicians. A few of these letters have been selected to be answered in the Queries and Minor Notes department. It may be said that, as a general proposition, there is no difference between the new and the old Selective Service Law except as to the ages included and the slight broadening of the terminology concerning exemptions. With special exceptions, all male persons who are above 18 years of age and have not reached their forty-sixth birthday on September 12 must register. The exceptions are those who have registered under the previous draft acts, whether or not called for service; officers and enlisted men of the Regular Army; officers appointed and men of the forces drafted under the previous draft act; "officers and enlisted men of the National Guard while in the service of the United States; and the officers of the Officers' Reserve Corps and enlisted men in the Enlisted Reserve Corps while in the service of the United States; and officers and enlisted men of the Navy and Marine Corps and officers and enlisted and enrolled men of the Naval Reserve Force and Marine Corps Reserve while in the service of the United States." As we have stated before, there are in the United States 75,000 physicians, including those already commissioned, under 46 years of age. The question of greatest interest is the disposition of physicians after their registration. There is nothing in the bill, as we read it, that provides for any different method of applying the selective service principles than that which has heretofore governed the disposition of those under 31 years of age. The Selective Service Boards are the only bodies empowered under the law to grant exemptions. Undoubtedly special regulations concerning physicians will be promulgated by the Provost Marshal-General. It is quite probable that in formulating these regulations the Provost Marshal-General will consult some or all of the Surgeon-Generals of the various services. As we stated last week, the problems of adequately providing for the medical needs of the Army and Navy and of the civil population are more complex than those affecting any other occupation, because of the great demand and the somewhat limited supply. Last week we outlined these demands, and it is not necessary to repeat them. The one question asked in most of the letters received is, What constitutes dependency so far as physicians are concerned? It has been suggested that physicians could not advance a plea for exemption on the grounds of dependency, since they are eligible for a commission, which would give an income sufficient to support a small family in fair circumstances. Local boards in some communities have refused to exempt physicians on the grounds of dependency for this reason; on the other hand, the opposite principle has been carried out by other local boards. In view of the large number of physicians now affected, these matters will no doubt also be considered in the special regulations concerning physicians.

BARLEY AS A WAR TIME SUBSTITUTE FOR WHEAT

When the United States Food Administration issued its appeal to this nation to "save the wheat," the advice was simultaneously given to make liberal use of substitutive cereals which may be available in greater abundance or lend themselves less readily to use overseas. Corn, rice, oats, rye and barley at once assumed a new prominence as "breadstuffs" for people little accustomed to consume them in such liberal portions as the new regimen seemed to demand. The belief, deeply ingrained in many persons, that wheat is an essential of good nutrition, has largely if not entirely been dispelled alike by the assurances of our foremost students of nutrition, and by the experience of a population that has voluntarily reduced its use of wheat so as to release more than 120,000,000 bushels for shipment to Europe in less than a year. If we are ready to admit that wheat is not indispensable,[1] there may still remain some concern regarding the nutritive virtues of the substitutive cereals. Polished rice has come into bad repute, perhaps unjustly or at least unnecessarily, because it is so milled as to lose its natural content of antineuritic vitamin. However dangerous the use of a diet deficient in vitamins may be, it should always be borne in mind in discussions

1. Why Wheat? editorial, THE JOURNAL A. M. A., Sept. 1, 1917, p. 732.

of the milling question that, as a rule, man does not live by polished rice alone; nor does our population subsist on wheat or any other cereal to the practical exclusion of all other vitamin-bearing foods. This being the case, the problem of the wheat substitutes is narrowed to the question, not of their perfection as the bearers of all nutrient virtues, but rather of their relative value in comparison with wheat as a part of a mixed diet. In this respect the liberal use of corn (maize) has already well justified itself.[2] A recent study of the dietary qualities of barley by Steenbock, Kent and Gross[3] at the University of Wisconsin justifies the assertion that this cereal does not differ essentially in its nutritive qualities from maize, oats or wheat—a statement which "may serve to allay the fears of those dietitians concerned over the use of barley as a wheat substitute." Like the other cereals, barley alone is unable to meet the demands of nutrition satisfactorily. By supplementing it with suitable protein, fat-soluble vitamin, such as butter or cream or milk affords, and with those inorganic elements in which the cereals are singularly deficient,[4] one can prepare an excellent food mixture. This is precisely what is accomplished, in the usual order of culinary events, when our breadstuffs are cooked and served with milk, meats, eggs and green vegetables. There appears to be no reason for according to barley anything but a welcome on its return to the fold of human foods. Though it is inferior to wheat and rye from the technical standpoint of the baker of the loaf, barley is acceptable to the physiologist even without its conversion into "liquid bread," the catchword so often cited to justify the use of beer.

HOW MANY MEALS A DAY?

Modern investigations of metabolism have demonstrated that the transformation of energy is determined by the needs of the body. Although it has little power to adjust its energy metabolism to the energy value of its food supply, the latter nevertheless has an unmistakable if slight effect. Rubner designated the specific effects of the three types of food on the energy exchange as their specific dynamic action. The simplest formulation of this somewhat obscure phenomenon that has come to our attention is attributable to Sherman,[5] as follows:

> When the digestion products of carbohydrate or fat are carried by the blood to the tissues, the energy metabolism (rate of oxidation) rises simply because of the increased concentration of oxidizable material; but some of the products of the digestion and intermediary metabolism of protein increase metabolism not only to a greater extent, but also in a somewhat different manner, since they seem to act as stimuli rather than merely as fuel. On an ordinary mixed diet, however, this apparent loss of energy due to the eating of protein is not a very large factor in the total metabolism, since the total specific dynamic action makes the metabolism of energy for the day only about one tenth higher on a full maintenance ration than when no food is eaten.

Not all meals are characterized by a large increment of heat production attributable to food per se. Soderstrom, Barr and Du Bois[6] have demonstrated, in experiments conducted under the auspices of the Russell Sage Institute of Pathology, that the rise in metabolism following a small breakfast yielding about 225 calories is small and transient in character. This has raised the question — economic more than physiologic in significance—whether it may be advantageous to divide the daily food intake into five or six small meals instead of two or three larger ones as is now usually the custom. The answer has been given by the investigators just referred to. The frequent meals, just supplying the energy as it is required, would, they admit, diminish the specific dynamic action and result in a saving equivalent to, perhaps, 5 or 10 per cent. of the basal metabolism, or about 200 calories a day. Practically, it would be of little importance, since some of the specific dynamic action of the food is utilized in the increased metabolism of work. To this may be added the suggestion of a waste of time in taking frequent meals and the tendency to overeat.

CHANGING STANDARDS AND MEDICAL PROGRESS

We cannot forbear quoting the following comment from a recent scientific contribution to the statistics of infancy:

> The medical profession is very reluctant to adopt new standards, but having been once convinced as to their correctness, they are just as loath to discard them. The result is that certain standards such as weights and measures, for example, are copied by one writer after another for years without any one, or at least very few, taking the trouble to verify their correctness. Standards which are correct in one country are often quite incorrect in another country, under different conditions.[7]

It would not be a difficult task to select illustrative instances to which this criticism is appropriately applicable. They include our inherited prejudices as well as our accumulated ignorance. In this category belong the assertions about drugs at length abandoned in view of their demonstrated inertness; the transmitted refinements of prescription which distinguish between white and dark meats or class all cheese indiscriminately with the indigestible substances; the exaggerated notions as to the quantity of protein required "for health and strength," and the unfortunate underestimate of the energy requirement of growing boys and girls. The paper from which the preceding animadversion is quoted presented a few specific instances relating to the nutrition and growth of newborn infants and of several hundred cases at the University of Minnesota Hospital. Thus the classic German computations of the energy requirements of infants are given as from 100 to 110 calories per kilogram of body weight. The Minnesota data show that all of the infants at a very early age who made good

2. Corn in the War Time Dietary, editorial, THE JOURNAL A. M. A., June 15, 1918, p. 1865.
3. Steenbock, H.; Kent, Hazel E., and Gross, E. G.: The Dietary Qualities of Barley, Jour. Biol. Chem., 1918, 35, 61.
4. Inorganic Elements in Nutrition, editorial, THE JOURNAL A. M. A., Aug. 24, 1918, p. 660.
5. Sherman, H. C.: Chemistry of Food and Nutrition, New York, 1918, p. 190.
6. Soderstrom, G. F.; Barr, D. P., and Du Bois, E. F.: Clinical Calorimetry, Paper 26, The Effect of a Small Breakfast on Heat Production, Arch. Int. Med., May, 1918, p. 613.
7. Ramsey, W. R., and Alley, A. G.: Observations on the Nutrition and Growth of New-Born Infants: An Analysis of Three Hundred Clinical Charts, Am. Jour. Dis. Child., June, 1918, p. 408.

gains and left the hospital weighing more than the birth weight made their gain on much less than the quantity cited. It is apparent, Ramsey and Alley say in confirmation of Morse and Talbot[8] and others, that infants, at least during the first ten days, in order to gain reasonably in weight do not require anywhere near 100 calories per kilogram of body weight, that the energy quotient varies in the individual cases from 43 to 75, and that when new-born infants during the first ten days receive 100 calories per kilogram they are usually overfed. This statement does not apply, of course, to the needs of the prematurely born infant. Again, although the number of stools of infants during the first weeks of life is variously estimated by different writers at from two to six a day, the Minnesota pediatricians observed an average of less than two a day. They remark that overfed infants, that is those receiving an approach to 100 calories per kilogram of body weight, were the only ones in which the stools were frequent and exceeded an average of two in twenty-four hours. Such are the contrasts of fact and fancy.

THE CASEIN OF HUMAN MILK

If human milk is to be the prototype of the ideal food mixture for the growing child, it is essential to learn as many details as possible regarding it. For obvious reasons, most of our accurate information regarding milk has been obtained from the secretion of the mammary glands of the cow. Despite the years already devoted to the study of the chemistry of cow's milk, much remains to be learned. Some of the recent discoveries, notably those regarding the phosphatids, the unsuspected proteins and the significant vitamins, bear witness to the possibilities of intensive investigation in this field.[9] At the Laboratories of the Boston Floating Hospital, Bosworth and Giblin[10] have completed a very thorough investigation of the casein of human milk, which is perhaps its most significant protein—at any rate, so far as the much discussed curdling of the milk is concerned. They found the human product to resemble the casein from cows' and goats' milk in every detail examined. It has the same proximate composition, the same degree of valence, and gives the same series of salts with bases. Like that of the casein from the other sources cited, the human protein has a molecular weight of nearly 9,000. It is acted on by the curdling enzyme rennin in the same manner, the resulting paracasein or curd protein being similar to that yielded by cows' milk. The demonstration of such fundamental resemblances, even if they may not be identities, will serve to dispel some of the prevalent misconceptions regarding unproved unique chemical features of human milk.

8. Morse and Talbot: Diseases of New-Born and Infant Feeding, 1915.
9. The Composition of Milk Fats, editorial, THE JOURNAL A. M. A., Nov. 3, 1917, p. 1529; Purins in Cow's Milk, March 16, 1918, p. 784.
10. Bosworth, A. W., and Giblin, Louise A.: The Casein of Human Milk, Jour. Biol. Chem., 1918, **35**, 115.

Women's Employment.—As early as 1867, women were grinding drills, tending light machines, and performing filing operations in a machine shop in New Bedford, Mass.

Medical Mobilization and the War

Missing

A casual report states that Capt. Dana C. Schmahl, M. C., U. S Army, St. Paul, is missing after action in France.

Red Cross Physicians in Manchuria

Four physicians of the American Red Cross have gone to Vladivostok to the Manchurian front to investigate refugee and civilian relief conditions. The Red Cross unit has taken over the surgical department of the Harbin Military Hospital, and will also establish an evacuation hospital near the front.

Prisoners in Germany

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Result of Survey of Medical Society of District of Columbia

A recent survey by questionnaire of 562 members of the Medical Society of the District of Columbia resulted in the following classification with respect to obligation for military service:

	Available for service, in the following order:	
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1	Commissioned but not yet assigned to duty	14
2	Commissioned but discharged at own request; willing to reenter service	2
3	Commission awarded but not yet accepted	3
4	Application for commission pending	12
5	Independent means	4
6	No dependents	21
7	Dependents, minor degree. (Officer's salary sufficient or sufficient when supplemented by private means, or dependents all adults)	61
8	Dependents, major degree	127
	Total available	269
	Not available because of:	
	Age	90
	Sex	30
	Foreign citizen	3
	Physical disability (Rejected, 17; discharged, 4)	36
	In active military service	120
	Engaged in Red Cross or similar service	4
	Total not available	293

EXPERIENCE OF THE NEW ARMY MEDICAL OFFICER

The new Selective Service Law is being received with various emotions by physicians under 46 years of age who are physically qualified for service in the Army. Some are rejoicing that a decision will be made for them; others are fearing that they may be "called." Many have been hesitating about volunteering for the Medical Corps, fearing that they would not like the work. As a matter of fact, few men have regretted entering the service. Since the United States entered the war THE JOURNAL has received thousands of letters from men in service, and nine out of ten have expressed themselves as being glad they made the choice. To encourage those who fear they might not like the work, we quote below from two personal letters received in the same mail by two members of the editorial staff of THE JOURNAL. The first is from a physician who has been in active practice between fifteen and twenty years, devoting himself more or less to surgery, and who, it will be noticed, was at once ordered into practical work in a base hospital. The second is from a physician who has been in practice between twenty and twenty-five years, and has held important teaching and hospital positions in his specialty. At his own request he was ordered to an officers' training camp—Fort Oglethorpe. Both of these men have been successful in practice, undoubtedly averaging over $10,000 a year.

My Dear Doctor:—Just a page or two from a six weeks' veteran in the service who has gotten his second wind on September morn and in the first leisure moment thought you might be agreeable to have a break in your morning grist of mail.

Speaking of leisure, it does seem strange that the gamut has been run of vaccinations, inoculation, statements of pedigree, physical examinations, etc., etc., and to learn that the government is satisfied that it has one listed from A to Z. However, it is a fine system and it is a personal satisfaction to learn of one's physical inventory.

As far as work is concerned, there is plenty. My assignment to the operating room has given me an abundance of operative work. In my room we have averaged ten operations a day during the month of August. They run along a somewhat uniform line, consisting of hernias, appendixes, cysts, neoplastic growths and suppurative processes; likewise traumatisms and fractures. The surgical department did 342 herniotomies with but three minor infections in August. A good record considering the intense heat.

The men here are a splendid lot of fellows and are typical of what the profession is doing in the war and the sacrifices they are making. It is really marvelous what these men are doing and what they are denying themselves, and the spirit in which they are doing it. It is surely a matter of organizational pride.

The officer on duty in the line has his hour-and-a-half a day relief from duty. The medical officer is on duty twenty-four hours and especially in surgery he must remain within call. If he wants to go to a "movie" he has to look up a fellow officer who will stay in and protect his service. And then if you go wrong you are responsible for the acts of your relief. Neither does it matter if you are called during the night and miss several hours' sleep, you have no opportunity for a late "snooze" in the morning. To see men assume such tasks and to know that in private life they had not been accustomed to put up with such confinement and restrictions intensifies one's admiration.

There is but one criticism and possibly it is only a minor one and only of passing moment: During that hot spell a general order of the C. O. of the base hospital made it obligatory for medical officers to wear their coats in the hospital and also in the camp. Line officers and privates were going around in their shirts, but the base hospital officers were sweltering in their coats to maintain their professional (?) dignity. It created considerable grumbling, but we wore them. It would have been a consideration for comfort to have been permitted to go without them, but evidently others thought it wise not to exhibit such consideration for personal comfort.

When THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION arrives there is an eager scramble for copies, and interest is first directed to "Army News" to see who received orders or

gains and left the hospital weighing more than the birth weight made their gain on much less than the quantity cited. It is apparent, Ramsey and Alley say in confirmation of Morse and Talbot[8] and others, that infants, at least during the first ten days, in order to gain reasonably in weight do not require anywhere near 100 calories per kilogram of body weight, that the energy quotient varies in the individual cases from 43 to 75, and that when new-born infants during the first ten days receive 100 calories per kilogram they are usually overfed. This statement does not apply, of course, to the needs of the prematurely born infant. Again, although the number of stools of infants during the first weeks of life is variously estimated by different writers at from two to six a day, the Minnesota pediatricians observed an average of less than two a day. They remark that overfed infants, that is those receiving an approach to 100 calories per kilogram of body weight, were the only ones in which the stools were frequent and exceeded an average of two in twenty-four hours. Such are the contrasts of fact and fancy.

THE CASEIN OF HUMAN MILK

If human milk is to be the prototype of the ideal food mixture for the growing child, it is essential to learn as many details as possible regarding it. For obvious reasons, most of our accurate information regarding milk has been obtained from the secretion of the mammary glands of the cow. Despite the years already devoted to the study of the chemistry of cow's milk, much remains to be learned. Some of the recent discoveries, notably those regarding the phosphatids, the unsuspected proteins and the significant vitamins, bear witness to the possibilities of intensive investigation in this field.[9] At the Laboratories of the Boston Floating Hospital, Bosworth and Giblin[10] have completed a very thorough investigation of the casein of human milk, which is perhaps its most significant protein—at any rate, so far as the much discussed curdling of the milk is concerned. They found the human product to resemble the casein from cows' and goats' milk in every detail examined. It has the same proximate composition, the same degree of valence, and gives the same series of salts with bases. Like that of the casein from the other sources cited, the human protein has a molecular weight of nearly 9,000. It is acted on by the curdling enzyme rennin in the same manner, the resulting paracasein or curd protein being similar to that yielded by cows' milk. The demonstration of such fundamental resemblances, even if they may not be identities, will serve to dispel some of the prevalent misconceptions regarding unproved unique chemical features of human milk.

8. Morse and Talbot: Diseases of New-Born and Infant Feeding, 1915.
9. The Composition of Milk Fats, editorial, THE JOURNAL A. M. A., Nov. 3, 1917, p. 1529; Purins in Cow's Milk, March 16, 1918, p. 784.
10. Bosworth, A. W., and Giblin, Louise A.: The Casein of Human Milk, Jour. Biol. Chem., 1918, **35**, 115.

Women's Employment.—As early as 1867, women were grinding drills, tending light machines, and performing filing operations in a machine shop in New Bedford, Mass.

Medical Mobilization and the War

Missing

A casual report states that Capt. Dana C. Schmahl, M. C., U. S Army, St. Paul, is missing after action in France.

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who has come in. If the War Department would permit it, could you not publish the location of the evacuation and field officers and base hospitals overseas? I frequently hear: "Where is Base 26, 77, 34 located in France and who is the C. O.?" The men in the United States seem to wonder where their comrades of camp life are located "Over There." I am sure all the men would appreciate such information. (Not permitted. Ed.).

———— Captain, Base Hospital.

My Dear Friend:—Just a line to let you know how things are going. This is a real place, mightily glad they sent me here, the training is excellent and just the thing for the doctors; they make an old doctor young, and a young doctor better. We are carefully watched in our training and I feel a man can get what he works for. They say I have adapted myself well. This I do know: I am pleased with the work and it is mighty interesting. The instructors are men of high ability and if one does not profit by this training it is his fault, and not that of the staff of instructors. The teaching staff are in earnest and give the men the best they have, and it has been a big sacrifice for them. The military training and discipline is what we all need and it is going to be a great help to me if I ever return to private practice after this war. When a man finishes his internship in a hospital, he ought to have six months' military training as we get it here. I hope my sons can get it.

————, Captain, M. C.
Fort Oglethorpe, Ga.

COMMISSIONS ACCEPTED, U. S. NAVAL RESERVE FORCE

Previous lists published in THE JOURNAL, June 29, July 13, 20 and 27, August 3, 10 and 31.

CALIFORNIA
Long Beach—Sweet, R. B.
Los Angeles—Werner, E. S.
San Francisco—Jenkins, L. R.

DISTRICT OF COLUMBIA
Washington—Hines, C. G.
Horrigan, D. E.

FLORIDA
Tampa—Hodgson, G. H.

ILLINOIS
Chicago—Howe, H. W.
Knapp, J. L.
Sullivan, T. J.

MARYLAND
Baltimore—Hundley, F. S.

MASSACHUSETTS
Boston—Holmes, F. G.

MICHIGAN
Jackson—Peterson, E. S.

MISSOURI
St. Louis—Johnson, E. H.

NEW JERSEY
Trenton—Kuhl, P. E.

NEY YORK
New York—Klapper, H.

PENNSYLVANIA
Philadelphia—Newcomer, H. S.
Vaughn, J. W.
Pittsburgh—Jorden, H. D.
Scranton—Sullivan, J. J., Jr.

TEXAS
Abilene—Hollis, S. W.

VIRGINIA
Suffolk—White, L. W.

COMMISSIONS ACCEPTED, MEDICAL CORPS, U. S. ARMY

Previous lists published in THE JOURNAL, June 1, 22 and 29, July 13, 20 and 27, August 3, 10, 17, 24 and 31.

ALABAMA
Birmingham—Cocke, N. P.
Jackson—Bedsole, J. G.
Marion Junction—Chisolm, J. R.
Montgomery—Salter, P. P.

ARIZONA
Flagstaff—Manning, T. P.
San Carlos—McDuffie, W. N.

ARKANSAS
Blue Ball—Pool, T. J.
Paris—Jewell, J. H.
Reson—Bell, J. F.

CALIFORNIA
Los Angeles—Bancroft, I. R.
Brown, H. V.
Copeland, J. C.
Hanson, W. P.
Johnson, C. A.
Oldham, J. Y.
Schroeter, O. V.
Tulley, F. E.
Oakland—Lohse, J. L.
Pasadena—Griffith, H. M.
Hansen, C. O.
San Francisco—Addis, T.
Patek, R.
Sunnyville—Dozier, W. E.
Tulare—Chilson, W. C.

COLORADO
Denver—Baskin, M. J.
Fraser—Harrison, F. H.
Recota—Wells, N. D.

CONNECTICUT
Bridgeport—Smith, S. R.
Hartford—Ashton, L. O.
Biram, J. H.
Monaghan, W. A.
New London—Young, J. F.
Waterbury—Smith, E. L.

DISTRICT OF COLUMBIA
Washington—Binderman, S. A.
Snowden, E.

FLORIDA
Tampa—Nelson, R. G.
Tifton—Smith, W. T.

GEORGIA
Atlanta—Manget, J. D.
Peacock, C. L.
Snyder, H. W.
Summerall, W. B.
Brunswick—Greer, C. B.
Calhoun—Starr, T.
Clermont—Cheek, P.
Collins—Harris, J. C.
Macon—Adams, I. H.
Hall, T. H.
Milledgeville—Garrard, J. I.
Milltown—Smith, D. L.
Moultrie—Smith, S. A.
Ochlachnee—Sappington, J. S.
Patterson—Davis, C. L.
Pinehurst—Lee, J. L.
Quitman—Mathews, W.
Rome—McCall, J. T.
Shaw, W. J.
Shenandoah—Mullahey, L. T.
Springfield—Griffin, E. W.
Statesboro—Floyd, F. F.
Thomasville—Holton, T. J.
Villa Rica—Malone, W. H.
Waycross—Bradley, D. M.

IDAHO
Idaho Falls—Willson, H. L.
Pocatello—Roberts, E. N.

ILLINOIS
Alton—Pfeiffenberger, M.
Anchor—Kerr, C. R.
Anna—Rendleman, G. F.
Ashkum—Struthers, H. R.
Bloomington—Deneen, F.
Bonfield—Yeates, Wm.
Bridgeport—Schrader, J. F.
Champaign—Cavenne, E. L.
Chicago—Borchert, R. L.
Broudo, P.
Buckley, J.
Cloud, H. B.
Ellis, J. W.
Harmon, M. S.
Hills, L. H.
Holzmann, F. C.
Jacobson, J.
Johannes, P. C. W.
Malone, L. V.
Mosley, E. W.
Oliver, E. A.
Schram, D. L.
Seifert, E. H.
Tabenski, L.
Voigt, R. A.
Waterous, W. H.
Welch, W. T.
Wieneke, C. H.
Zaleski, J. P.
Cicero—Naikelis, S.
East Moline—Donahoo, C. E.
Elgin—Hughes, L. J.
Eureka—Smith, R. H.
Fairbury—Langstaff, J. H.
Gibson City—Lane, K. N.
McLeansboro—Moore, L. R.
Morrison—Downs, J. M.
Mount Morris—Price, C. J.
Nashville—Vernor, R. C.
Newman—Rutherford, C. W.
Oak Forest—Summers, A.
Ottawa—Edgecomb, J. H.
Pana—Miller, L. H.
Peoria—Hubbard, A. E.
Perry—Dunn, B. B.
Pleasant Plains—Huber, F. D.
Polo—Powell, C. E.
Rochelle—Stevens, R. E.
Rochester—Fortune, H. C.
Rockford—Catlin, S. R.
Rock Island—Davenport, F. N.
Sheldon—Seever, C. W.
Spring—Snivley, C. D.
Springfield—Penniman, W. L.
Smith, E. D.
Sumner—Green, W. I.
Walnut Hill—Cruzen, R. E.
Wauconda—Coon, W. W.
West Frankfort—Bennett, C. E.
Williamsville—Haskell, C. D.
Winnetka—Bodman, E. W.

INDIANA
Anderson—Brock, E. E.
Buck Creek—McCabe, J. E.
Clayton—Jones, R. E.
Dale—McClary, D. V.
Fanont—Brown, C. N.
Indianapolis—Auble, C. S.
Hicks, L. C.
Orders, C. E.
Kempton—Dunham, W. F.
Kentland—Ramp, R. S.
Logansport—Hare, J. H.
Shultz, H. M.
Madison—Denoy, F. C.
Mishawaka—Dresch, C. A.
Petersburg—Byers, O. A.
Walton—Albertson, C. S.

IOWA
Arlington—Hazard, C. M.
Arthur—Patterson, S. T.
Burlington—Woodbury, E. L.
Carbon—Amdor, W. F.
Davenport—Harkness, G. F.
Denison—Menagh, F. R.
Des Moines—Meredith, L. K.
Eldora—Winnet, J. R.
Monona—Brownson, J. D.
Remsen—Hombach, W. H.
Rockford—Yenerick, C. O.
Roland—Snyder, J. A.
Sioux City—Katherman, C. A.
State Center—Pence, L. W.
Waverly—Sparks, F. R.

KANSAS
Beloit—Pickier, R. S.
Burdick—Lovene, A. W.
Cherryvale—Kellam, S. H.
Concordia—Prout, W. S.
Fredonia—Young, W. H.
Grenola—Mason, B. B.
Kansas City—Lind, A. J.
Leavenworth—Risdon, J. W.
Sterett, D. R.
Medicine Lodge—Jordan, B. H.
Meriden—Taylor, R. A.
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Gootee, H. W.

KENTUCKY
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Zimmerman, B. F.
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LOUISIANA
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Shreveport—Frater, F. J.
Slicer, J. E.
Smith, J. H.
Springfield—Ehlert, J. M.

MAINE
Augusta—Poulin, J. E.
Island Falls—Schneider, G. A.
Waterford—Stimpson, A. J.

MARYLAND
Baltimore—Bross, S. I.
Cunningham, R. S.
Holyday, W. M.

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Malone, C.
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Fall River—Moran, A. C.
Fitchburg—Jones, R. C.
Gloucester—Quimby, H. L.
Holyoke—Robert, G. F.
Lawrence—Hilton, J. J. H.
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Natick—Annis, S. B.
Worcester—Leib, E. R.
Williams, F. R.

MICHIGAN
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Garner, H. B.
Hensel, R. D.
Lansing—Rapp, J. H.
Marshall—Niles, W. H.
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Ypsilanti—Rexford, W. K.

MINNESOTA
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McIntosh—Amundsen, A. E.
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Russell—Hall, E. L.
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MISSISSIPPI
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Torrance—Sayle, D. T.

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Kowalsky, Z.
Lyttle, G. C.
Marguilis, A. A.
Peden, S. E.
Sauer, W. E.
Shaw, J. W.
Swahlen, P. H.
Weiss, W.
Yahlem, N. N.
Zeinert, O. B.
Sweet Springs—Ringen, A. H.

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Marion—Bartholomew, W. S.
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Warner—Cogswell, L. H.

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Griffiths, C. B.
Plainfield—Cregar, P. B.
South Amboy—Tadeusiak, B. H.
Union Hill—Justin, A. W.

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Wagon Mound—Gibbs, H. W.

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Hughes, B.
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McLean, S.
Shank, E. W.
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Kewitt, D. B.
Rockville Center—Wheelock, W. E.
Stapleton—Matusoff, I.
Staten Island—Coonley, F.
Troy—Curtis, S. H.

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Manteo—Johnston, W. W.

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Jamestown—Shepard, G. P.

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Thompson, C. W.
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Miller, G. W.
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McQueen, W.
Dover—Keller, W. R.
McQuire, S. B.
Hudson —Herrick, H. J.
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Morral—Jolley, J. W.
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Chamberlin, W. K.
Toledo—Burman, H. F.
Collier, E. M.
Kerr, L. E.
Kreft, F. G.
Morgan, H. J.

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Idabel—Moreland, W. A.
Oilton—Noah, J. H.
Rutherford, B. C.
Okemah—Bloss, C. M.
Oklahoma City—Kelly, J. F.
Long, L.
Westfall, L. M.
Paula Valley—Spangler, A. S.
Sallisaw—McKee, S. A.
Shawnee—Hughes, J. E.
Tulsa—Douglas, R. A.

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Portland—Young, G. N.
Westfall—Schenk, H. J.

PENNSYLVANIA

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Lutz, C. L.
Bitumen—Mervine, G. D.
Boyers—Sisney, T. L.
Braddock—Egan, J. P.
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DeBois—Patterson, F. G.
Dunlo—Livingston, W. W.
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Hershey—Zimmerman, J. L.
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Lebanon—Pretz, R.
McDonald—Douglass, J. A.
LaRoss, W. A.
Taylor, J. P.
McKees Rocks—Lafferty, J. A.
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Mount Pleasant—Depta, M.
New Florence—Tittle, H. W.
Norristown—Wolfe, J. R. V.
Philadelphia—Bernard, M. B.
Coyle, W. V.
Davis, T. C.
Light, A. B.
Richards, J. L.
Tunis, J. P.
Pittsburgh—Butz, R. C.
Evans, D. R.
Eyman, W. G.
Kipp, H. A.
Kistler, J. D.
Newman, M. A.
Schuylkillhaven—Ryan, H. T.
Scranton—Van Vechten, G. J.
State College—Glenn, G. C.
St. Clair—Jones, E. T.
Washington—Beveridge, D.
Wilkes-Barre—Quinn, J. J.
Woodbine—Smith, W. C.

RHODE ISLAND

Providence—Heaton, H. W.

SOUTH CAROLINA

Chesnee—Cash, J. B.
Clover—Campbell, I. J.
Greenwood—Blake, C. H.
Routh, F. M.
Turner, W. P.

SOUTH DAKOTA

Kimball—Willy, R. G.

TENNESSEE

Centerville—Beasley, J. S.
Fountain City—Massey, J. F.
Knoxville—Rogers, O. W.
Memphis—Conley, H. P.
Madison—Swift, C. L.

TEXAS

Amarillo—Caldwell, A. J.
Ballinger—Love, A. S.
Beaumont—Pedigo, H. B.
Corsicana—Bowmer, O. C.
Dallas—Hendricks, H. H.
Dawson—Steen, C. T.
Dayton—Spear, J. D.
El Paso—Rogers, W. P.
Stark, H. H.
Ennis—Cook, C. P.
Fargo—Rogers, A. C.
Fort Worth—Dreiss, C. A.
Saunders, D. J.
Garner—Barrett, L. C.
Humble—Falvey, J. C.
Lufkin—Dillen, O. M.
Rockdale—Barkley, T. S.
Southmayd—Russell, B. A.
Stephenville—Gordon, T. M.
Sunset—Wright, E. W.
Texarkana—Lanier, L. H.
Tyler—Pope, J. H.
Vernon—King, T. A.
Reger, H. J.
Waco—Stanislav, F. J.

UTAH

Salt Lake City—Lynch, H.

VERMONT

Barre—Woodruff, J. H.
Bennington—Cole, J. H.
East Arlington—Gilay, S. K.
Orleans—Wells, R. M.

VIRGINIA

Catawba Sanitarium—Brown, W. E.
Edgehill—Baker, R. M.
Hurley—Wire, B. O.
Richmond—Foster, J. F.

WASHINGTON

Cenlee City—Crampton, J. H.
Olympia—Steele, J. F.
Port Townsend—Simmons, W. R.
Seattle—Snow, A. G.
Sunnyside—Shuman, J. R.
Taylor—Howetson, J. W.

WEST VIRGINIA

Brammell—Brown, J. E.
Mason—Sayre, R. F.
Moundsville—Morgan, C. G.
Parkersburgh—Richardson, W. B.
Petersburg—Grove, J. B.
Wallace—Whisler, H. A.
Wheeling—Copeland, H. B.

WISCONSIN

Athens—Winneman, W. J.
Burlington—Newell, F. F.
Chetek—Malcolm, J. J.
Clintonville—Jefferson, H. A.
Fond du Lac—Twohig, J. E.
Lone Rock—Eagan, K. L.
Madison—Elson, J. C.
Marshfield—Sexton, W. G.
Mason—Harrison, D. C.
Milwaukee—Ross, P. M.
Ruschhaupt, L. F.
Montreal—Riggs, H. F.
Oshkosh—Andrews, N.
Tomah—Fitch, R. F.

ORDERS TO OFFICERS OF THE MEDICAL CORPS U. S. ARMY

Alabama

To Camp Dix, N. J., base hospital, Capt. J. T. KENT, Birmingham.
To Camp Hancock, Ga., Lieut. C. L. SALTER, Talladega.
To Camp Jackson, S. C., base hospital, Capt. J. SCHWARZ, Mobile.
To Camp Sevier, S. C., base hospital, from Fort Oglethorpe, Capt. M. T. GAINES, Mobile.
To Camp Wadsworth, S. C., from Canal Zone, Capt. I. MICHLIN, Birmingham.
To Danville, N. Y., from Walter Reed General Hospital, Major E. D. BONDURANT, Mobile.
To Fort Oglethorpe for instruction, Lieuts. H. B. POWELL, Bessemer; C. S. MERRIAM, Montgomery.
To Lakewood, N. J., for instruction at the Cardiovascular School, Capt. G. W. BASS, Badsden.

Arizona

To Camp Kearney, Calif., Lieut. V. C. CHARLESTON, Bisbee.
To Hoboken, N. J., from Fort Oglethorpe, Lieut. E. R. McPHEETERS, Clifton.

Arkansas

To Camp MacArthur, Texas, Capt. J. E. MARTIN, Springdale.
To Fort Oglethorpe for instruction, Lieuts. T. E. RHINE, Thornton; J. C. LAND, J. C. SWINDEL, Walnut Ridge.

Canal Zone

To Fort Oglethorpe for instruction, Capt. F. W. ROMAINE, Ancon.

California

To Boston, Mass., Harvard Graduate School of Medicine, for instruction, from Fort Oglethorpe, Lieut. H. W. NIELSEN, Fresno.
To Camp Crane, Pa., from Camp Lewis, Lieut. W. T. ROTHWELL, Los Angeles.
To Camp Fremont, Calif., to examine the command for nervous and mental diseases, from Talmadge, Lieut. M. H. HIRSCHFIELD, San Francisco.
To Camp Kearney, Calif., Lieut. H. G. C. BOGE, Oakland. Base hospital, Capt. A. T. NEWCOMB, Pasadena; from Fort Sill, Major H. C. LOOS, San Diego.
To Camp Lewis, Wash., base hospital, from duty as a contract surgeon, Capt. T. ADDIS, San Francisco.
To Camp Wheeler, Ga., as camp surgeon, from Camp Gordon, Major J. M. WHEATE, San Francisco.
To Canal Zone, Major R. L. I. SMITH, Pomona.
To Fort Bayard, N. M., for observation and treatment, from Camp Kearney, Lieut. B. A. SWARTZ, Los Angeles.
To Fort McDowald, Calif., from Camp Fremont, Major O. ANDERSON, Ocean Park.
To Fort Oglethorpe for instruction, Capt. J. G. HAM, San Bernardino; Lieut. W. J. McKENNA, Los Angeles.
To Fort Riley for instruction, Lieuts. W. P. MARTIN, Fresno; A. E. DICKINSON, San Jose.
To San Francisco, Calif., Letterman General Hospital, from Camp Fremont, Capt. W. C. BAKER, San Mateo; from Fort Winfield Scott, Major H. C. MOFFITT, San Francisco.
To report to the commanding general, Western Department, Capts. G. E. FULLER, Chula Vista; C. M. C. WALTERS, Los Angeles.
To his home, from Western Department, Major E. L. SWIFT, Fort McDowell.
Honorably discharged, Capt. G. M. DUNNE, San Francisco. On account of physical disability existing prior to entrance into the service, Lieut. C. F. CURTIS, Hollywood.

Colorado

To Camp Dodge, Iowa, from Rockefeller Institute, Lieut. R. A. PAINE, Denver.

To Camp Gordon, Ga., as tuberculosis examiner, from Fort Thomas, Lieut. O. A. GRANTHAM, Johnstown.
To Camp Perry, Ohio, from Fort Logan, Lieut. H. S. SHAFER, Denver.
To Fort Oglethorpe for instruction, Capt. C. H. WILKINSON, Canon City.
To Fort Riley for instruction, Capt. C. L. MILLER, Swink; Lieut. C. C. BELL, Denver.

Connecticut

To Boston, Mass., Harvard Graduate School of Medicine, for instruction, from Fort Oglethorpe, Lieut. T. L. STORY, Hartford.
To Camp Shelby, Miss., base hospital, Lieut. J. F. YOUNG, New London.
To Camp Wadsworth, S. C., from Camp Gordon, Lieut. B. C. PASUTH, Bridgeport.
To Denver, Colo., from Army Medical School, Capt. L. F. WHEATLEY, Meriden.
To Fort Oglethorpe for instruction, Lieuts. J. H. BIRAM, Hartford; C. H. AUDET, Waterbury.
To New Haven, Conn., from Camp Sherman, Lieut. E. S. BENNETT, New Canaan.

District of Columbia

To Camp Crane, Pa., from Camp Meade, Lieut. S. C. COUSINS, Washington.
To Camp Dick, Texas, as flight surgeon, Major J. O. McREYNOLDS, Washington.
To Camp Gordon, Ga., as camp surgeon, from Camp Lee, Major D. N. W. GRANT, Washington.
To Fort Oglethorpe for instruction, Lieut. C. F. X. LEIBELL, Washington.
To Mineola, N. Y., from the Surgeon-General's Office, Lieut.-Col. E. G. SEIBERT, Washington.
To Rockefeller Institute for instruction, and on completion *to Camp Dix, N. J.*, base hospital, from Washington, Capt. L. A. MARTEL, Washington. For instruction in laboratory work and on completion *to New Haven, Conn.*, Yale Army Laboratory School, from Fort Oglethorpe, Capt. F. A. HORNADAY, Washington.

Delaware

To Camp Dix, N. J., base hospital, Capt. S. M. D. MARSHALL, Milford.
To Rockefeller Institute for instruction in laboratory work, and on completion to New Haven, Conn., from Camp Lee, Lieut. H. M. BAKER, Shelbyville.

Florida

To Camp Lee, Va., base hospital, from Fort Riley, Lieut. C. L. KENNON, Jacksonville.
To Fort Oglethorpe for instruction, Major N. M. HEGGIE, Jacksonville; Lieuts. E. W. CROCKETT, Glen St. Mary; T. H. BATES, Lake City; S. PANIELLO, Tampa; R. O. COOLEY, West Palm Beach.
To Fort Sam Houston, Texas, base hospital, from Camp Beauregard, Major R. N. GREENE, Chattahoochee.
To New York, Neurological Institute, for instruction, from Richmond, Lieut. H. M. SMITH, Chattahoochee.

Georgia

To Boston, Mass., Harvard Graduate School of Medicine, for instruction, from Fort Oglethorpe, Lieut. G. Y. MASSENBURG, Macon.
To Camp Crane, Pa., from Camp Upton, Lieut. J. R. McCORD, Atlanta.
To Camp Dix, N. J., from Fort Oglethorpe, Lieut. V. G. WILLIAMS, Oddesadale.
To Camp Gordon, Ga., base hospital, Capt. H. L. RUDOLPH, Gainesville.
To Camp Hancock, Ga., Capts. R. C. SIMMONS, W. J. SHAW, Rome; Lieut. G. M. ANDERSON, Ray City.
To Fort Oglethorpe for instruction, Lieuts. G. F. LONG, Americus; J. H. STEED, Dalton; D. M. BRADLEY, Waycross.
To Washington, D. C., War College, from Camp Gordon, Lieut.-Col. W. T. CADE, Ja.

Idaho

To Fort Logan, Colo., from Camp Dodge, Lieut. C. W. SLUSSER, Grangeville.

Illinois

To Camp Crane, Pa., from Camp Grant, Lieut. R. M. FOUTS, Chicago; from Fort Logan H. Roots, Lieut. H. A. SULLIVAN, Rockford.
To Camp Custer, Mich., base hospital, from Fort Oglethorpe, Lieut. J. D. HAWKS, Cambridge.
To Camp Devens, Mass., from New Haven, Capt. C. W. LEIGH, Chicago.
To Camp Dix, N. J., as orthopedic surgeon, from Boston, Lieut. S. L. STEVENS, Dalton City.
To Camp Dodge, Iowa, Capts. J. L. MANNING, R. A. SMITH, Chicago. Base hospital, Capt. D. L. SCHRAM, Chicago. Evacuation hospital, from Fort Riley, Lieuts. V. J. NEALE, Chicago; O. R. SAUL, Dana.
To Camp Grant, Ill., base hospital, Lieut. H. CULVER, Chicago; from Camp Alfred Vail, Lieut. J. T. O'CONNELL, Ja., Chicago. *To examine the command* for nervous and mental diseases, Capt. J. F. WENN, Chicago.
To Camp Hancock, Ga., Lieut. H. H. SEYL, Chicago.
To Camp Meade, Md., base hospital, Capt. O. A. R. DONNELLY, Lieut. E. J. DEVINE, Chicago.
To Camp Pike, Ark., base hospital, from Fort Leavenworth, Capt. C. CULBERTSON, Chicago.
To Camp Upton, N. Y., base hospital, Lieut. V. M. CORMAN, Rushville.
To Camp Wadsworth, S. C., from Blacksburg, Va., Lieut. J. V. DILLMAN, Louisville; from Camp Jackson, Lieut. A. J. FIRTIK, Chicago; from Camp Kearney, Lieut. R. C. TENEROWICZ, Chicago; from Camp MacArthur, Lieut. C. K. STULIK, Chicago; from Camp Upton, Lieut. J. SLIVKA, Chicago; from Fort Oglethorpe, Lieuts. S. CZAJOWSKI, Chicago; F. J. CHMELIK, Joliet; from Morrison, Va., Lieut. F. L. FORTELKA, Chicago.
To Camp Zachary Taylor, Ky., as orthopedic surgeon, from Boston, Lieut. G. E. LYON, Decatur.
To Fort Des Moines, Iowa, for consultation, and on completion *to report to the Surgeon-General* for further orders, from Fort Leavenworth, Major H. M. ADLER, Chicago.
To Fort Oglethorpe, from Camp Beauregard, Lieut. H. BARANCIK, South Chicago; from Camp Custer, Lieut. J. R. GERSTLEY, Chicago. For instruction, Capt. J. V. WHITE, Auburn; H. WOOD, Batchtown, L. B. CAVINS, H. K. P. HAWKS, Bloomington; S. FOMON, H. B. THOMAS, J. M. HUBER, Chicago; C. W. YECK, Pawnee; G. D. DRENNAN, Woodhull; Lieuts. S. P. BLIM, I. H. CHILCOTT, J. P. GRAF, M. B. JELLIFFE, S. E. LYNCH, Chicago; L. P. PETERS, Clayton; R. H. SMITH, Eureka; W. F. ALLISON, Paris; H. W. ACKERMANN, Rockford.
To Fort Riley, for instruction, from duty as an enlisted man, Lieut. H. H. BEIL, Chicago.
To Fort Sam Houston, Texas, Lieuts. J. BUCKLEY, L. C. R. Lovellette, Chicago; W. E. G. MAYES, Dawson.
To Lakewood, N. J., Lieuts. G. H. ANDERSON, E. F. MEILKE, Chicago.
To Millington, Tenn., Park Field, from Camp Wheeler, Lieut. L. L. TURNER, Chicago.
To New Haven, Conn., Yale Army Laboratory School, for instruction, Lieut. A. E. CASSERLY, Chicago.
To report to the commanding general, Central Department, Lieuts. F. J. QUIRK, Chicago; R. A. HAMILTON, Hillsboro; J. G. YOUNG, Warsaw.
To Sacramento, Calif., Mather Field, from Arcadia, Capt. W. E. MERCER, Liberty.
To Walter Reed General Hospital, D. C., from Fort Sam Houston, Major E. W. FELL, Elgin.
To Washington, D. C., Surgeon-General's Office, from Camp Custer, Major C. E. KAHLER, Chicago.
Honorably discharged on account of physical disability existing prior to entrance into the service, Lieut. A. F. STEWART, Oneida.

Indiana

To Camp Crane, Pa., from Camp Zachary Taylor, Capt. P. B. COBLE, Indianapolis.
To Camp Dodge, Iowa, Lieut. H. C. METCALF, Andersonville.
To Camp Lee, Pa., from Fort Oglethorpe, Lieut. E. VAN REED, Lafayette.
To Camp Upton, N. Y., as orthopedic surgeon, from Boston, Capt. W. C. MOSS, Bunker Hill.
To Camp Wheeler, Ga., from Camp Lee, Lieut. J. L. HEDDING, Bluffton.
To Fort Oglethorpe, from Camp Custer, Lieut. C. H. MEAD, Bluffton; from Colonia, N. J., Capt. L. P. DRAYER, Fort Wayne. For instruction, Capts. F. HODGES, Indianapolis; M. J. COOMES, Versailles; Lieuts. R. S. KEMP, Kentland; H. G. WEISS, Rockport; R. E. SWOPE, Rockville.
To Fort Sam Houston, Texas, Lieut. H. H. DEEN, Leavenworth.
To Hoboken, N. J., base hospital, from Fort Slocum, Major H. M. HOSMER, Gary.
To New Haven, Conn., Capt. B. B. PETTIJOHN, Indianapolis.
To Rochester, Minn., for instruction, and on completion *to Camp Grant, Ill.*, base hospital, from Camp Grant, Lieut. B. E. LEMMON, Greencastle.
To Rockefeller Institute for instruction in laboratory work, and on completion *to New Haven, Conn.*, Yale Army Laboratory School, from Fort Oglethorpe, Capt. J. P. SEALE, Fairmount.
To Walter Reed General Hospital, D. C., from Camp Meade, Lieut. L. S. BOLLING, Attica.
To report to the commanding general, Central Department, Capt. A. H. CAFFEE, Terre Haute.
Honorably discharged on account of physical disability existing prior to entrance into the service, Lieut. C. L. SOUDER, Columbia City.

Iowa

To Arcadia, Calif., as post surgeon, from Camp Dix, Major C. H. COGSWELL, Cedar Rapids.
To Camp Dodge, Iowa, Capts. J. W. WOODBRIDGE, Cylinder; F. R. SPARKS, Waverly; Lieuts. J. T. McCONNAUGHEY, Winfield; L. W. PENCE, State Center. Base hospital, Capt. J. D. GEISSINGER, Spirit Lake.
To Camp McClellan, Ala., from Eastern Department, Capt. S. A. O'BRIEN, Mason City.
To Fort Oglethorpe for instruction, Lieuts. L. K. MEREDITH, Des Moines; C. O. VENERICH, Rockford; from duty as an enlisted man, Lieut. E. C. AMBROSE, Granby.
To Fort Riley for instruction, Lieuts. W. G. WALKER, Corydon; W. W. DAUT, Muscatine.
To Mineola, N. Y., from the Surgeon-General's Office, Lieut.-Col. F. R. LEWIS, Dubuque.
To Washington, D. C., from Camp Upton, Capt. H. G. VAUGHAN, Oak Park.
Honorably discharged on account of physical disability existing prior to entrance into the service, Capt. A. C. HANSEN, Chester.

Kansas

To Camp Dodge, Iowa, base hospital, Lieut. H. A. ALEXANDER, Topeka.
To Camp MacArthur, Texas, Capts. O. J. CORBETT, Emporia; O. M. OWENSBY, Pittsburg; Lieuts. D. L. HEIDRICK, Welda.
To Camp Pike, Ark., base hospital, Capt. J. A McLAUGHLIN, Greenburg.
To Fort Oglethorpe for instruction, Lieuts. C. O. DAVISON, Garden City; G. K. HAUGHEY, Wakeeney.
To Fort Riley for instruction, Capt. P. W. ROBINSON, Osawatomie; Lieuts. H. M. MAKINS, Abilene; J. W. WEST, Narka.
To Jackson Barracks, La, Capt. E. D. ELBRIGHT, Wichita; Lieut. J. O. WILLIAMS, Emporia.
To Middletown, Pa., Lieut. J. B. EDWARDS, Garden City.
To report to the commanding general, Central Department, Capt. W. B. COE, Waterville.
The following order has been revoked: *To Camp Grant, Ill.*, from Fort Riley, Capt. C. H. KOENTZ, Onaga.

Kentucky

To Ann Arbor, Mich., for intensive training, from Camp Zachary Taylor, Lieut. E. MOORMAN, Harned.

To Camp Wadsworth, S. C., from Camp Wheeler, Capt. J. U. RIDLEY, Robards.
To Fort McPherson, Ga., Capt. E. L. BUSBY, Lexington.
To Fort Oglethorpe for instruction, Capts. L. H. KERR, J. D. TRAWICK, Louisville; G. LAWRENCE, Shelbyville; Lieuts. S. L. HENSON, Benton; J. G. CLEM, Louisville; E. A. NORTH, Newport.
To Hoboken, N. J., from Camp Meade, Lieut. W. C. KUNKLER, Louisville.
To New Haven, Conn., Yale Army Laboratory School, for instruction, Lieut. O. BAILEY, Martha.

Louisiana

To Camp McClellan, Ala., from Camp Shelby, Lieut. W. M. LEDBETTER, Shreveport.
To Fort Oglethorpe for instruction, Lieuts. R. D. MARTINEZ, Bunkie; N. M. PALMER, Lessville; G. J. TAQUINO, New Orleans.

Maine

To Camp Dodge, Iowa, Lieut. A. H. RINGEN, Sweet Springs.
To Camp Jackson, S. C., from Camp Jackson, Lieut. H. G. McKAY, Bangor.
To Fort Oglethorpe for instruction, Lieut. C. C. HALL, Foxcroft.
To Fort Sam Houston, Texas, Lieut. F. E. LUMAN, Baring.
To Garden City, N. Y., Lieuts. R. D. WALTON, Frankfort; C. A. MACOMBER, New Sharon.
To Rockefeller Institute for instruction in the treatment of infected wounds, and on completion *to Camp Dix, N. J.*, base hospital, from Northwestern Department, Capt. D. W. WENTWORTH, Sanford.

Maryland

To Camp Custer, Mich., base hospital, Capt. W. B. PERRY, Baltimore.
To Camp Pike, Ark., to examine the command for nervous and mental diseases, from Camp Sheridan, Capt. M. LEVY, Baltimore.
To Camp Upton, N. Y., with the board examining the command for cardiovascular diseases, from Camp Lee, Capt. A. D. ATKINSON, Baltimore.
To Camp Wadsworth, S. C., from Fort Oglethorpe, Capt. R. R. NORRIS, Crisfield.
Resignation of Lieut. W. R. JOHNSON, Baltimore, accepted.

Massachusetts

To Azalea, N. C., Lieut. W. W. WALKER, West Somerville.
To Camp Beauregard, La., as orthopedic surgeon, from Boston, Lieut. W. J. LA LIBERTE, Fall River.
To Camp Crane, Pa., from Camp Greene, Major J. C. HUBBARD, Boston; from Camp Zachary Taylor, Lieut. C. SALMON, Worcester.
To Camp Devens, Mass., base hospital, Major S. G. UNDERHILL, Lynn.
To Camp Gordon, Ga., to examine the command for nervous and mental diseases, Capt. G. A. PEIRCE, Tewksbury.
To Camp Greene, N. C., base hospital, Capt. F. X. CORR, Dorchester.
To Camp Hancock, Ga., base hospital, Lieut. D. LOWRY, Ayer.
To Camp Jackson, S.C., from Camp Wadsworth, Capt. G. D. HENDERSON, Jr., Holyoke.
To Camp MacArthur, Texas, to examine the command for nervous and mental diseases, from Camp Gordon, Lieut. B. L. ASHMORE, Palmer.
To Camp McClellan, Ala., Capt. J. W. SANBORN, Lieut. J. S. McCORMACK, Boston.
To Camp Meade, Md., Lieut. W. L. WRIGHT, Boston.
To Camp Shelby, Miss., from Camp Devens, Lieut. E. J. BRAERTON, Boston.
To Camp Wadsworth, S. C., from Fort Oglethorpe, Lieut. L. W. HARRIS, Cliftondale.
To Fort Myer, Va., as orthopedic surgeon, from Boston, Lieut. H. W. ELLAM, Gardner.
To Fort Oglethorpe, evacuation hospital, from Boston, Lieut. J. H. SHORTELL, Boston; from Camp Upton, Major H. T. HUTCHINS, Boston. For instruction, Capts. F. K. SHAW, Concord; A. G. HURD, Millbury; C. B. VOLGATE, Rockland; H. RITTER, Springfield; Lieuts. D. G. LJUNGBERG, A. S. MacMILLAN, Boston; E. T. SAEGER, Brookline; F. S. LACZYNSKI, Holyoke; D. G. PLUMB, Melrose; A. J. LEARY, Newton; H. F. CLEVERLY, Situate; from Boston, Lieuts. N. W. GILLESPIE, A. KLEIN, Boston; from duty as an enlisted man, Lieut. GOLDBERG, Lynn.
To Fort Slocum, N. Y., Capt. A. C. DEDRICK, Fall River.
To Lakewood, N. J., for instruction in the cardiovascular school, Lieut. F. C. HALL, Brookline.
To Miami, Fla., gunnery school, from Garden City, Lieut. A. O. McLAUGHLIN, Haverhill.
To Mineola, N. Y., from the Surgeon-General's Office, Major W. B. LANCASTER, Boston.
To New Haven, Conn., Yale Army Laboratory School, for instruction, from Camp Lee, Capt. F. H. HIBBEN, Brookline.
To Rockefeller Institute for instruction, and on completion *to Bellevue Hospital, N. Y.*, for further instruction, and on completion *to Camp Wheeler, Ga.*, Lieut. J. H. COOK, Quincy.
To Walter Reed General Hospital, D. C., Lieut. J. B. A. JOHNSON, Lowell.
To report to the commanding general, Northeastern Department, Capt. G. S. ALLEN, Lawrence.
The following orders have been revoked: *To Camp Dix, N. J.*, Lieut. W. F. BRADY, Holyoke. *To Camp Lee, Va., to examine the command* for nervous and mental diseases, from Camp Meade, Lieut. M. W. PECK, Marblehead.

Michigan

To Camp Crane, Pa., Lieut. E. V. MAYER, Detroit; from Camp Zachary Taylor, Lieut. T. E. HACKETT, Jackson.
To Camp Devens, Mass., as orthopedic surgeon, from Boston, Lieut. H. F. OHRT, Detroit.
To Camp Dodge, Iowa, Capt. J. C. CLIPPERT, Lieut. R. R. GOLDSTONE, Detroit.
To Camp Jackson, S. C., as orthopedic surgeon, from Fort Oglethorpe, Lieut. R. H. RUEDEMANN, Ann Arbor.
To Camp Perry, Ohio, Capts. G. J. SCHALLER, Detroit; H. W. KNAPP, Gaylord.
To Camp Pike, Ark., as orthopedic surgeon, from Fort Oglethorpe, Lieut. E. D. KING, Detroit; from Syracuse, Lieut. H. R. LEIBINGER, Detroit.
To Fort Oglethorpe, evacuation hospital, from Camp Zachary Taylor, Capt. J. A. ELLIOTT, Battle Creek. For instruction, Lieuts. P. R. URMSTON, Bay City; G. R. YOUNG, L. B. COWEN, D. WEINGARDEN, Detroit; W. C. SWARTOUT, Muskegon; H. E. WHITNEY, Ostego.
To Garden City, N. Y., Capt. A. E. HENWOOD, Kalamazoo; Lieuts. W. H. ROBINSON, Detroit; S. R. EDWARDS, Grand Rapids.
To Mount Clemens, Mich., Selfridge Field, Capt. C. D. MUNRO, Jackson; Lieuts. R. L. CLARK, Detroit; J. J. McCANN, Ionia; H. A. MILLER, Lansing.
To New Haven, Conn., Yale Army Laboratory School, for instruction, Lieut. C. M. SPENCER, Freesoil.
To New York, Neurological Institute, for instruction, Capt. R. C. STONE, Battle Creek.
To Rockefeller Institute for instruction in the treatment of infected wounds, and on completion *to proper station*, from Camp A. A. Humphreys, Capt. C. L. BARBER, Lansing.
The following order has been revoked: *To Camp Wadsworth, S. C.*, from Camp MacArthur, Capt. J. P. BLAND, Adrian.

Minnesota

To Azalea, N. C., from Fort Thomas, Lieut. G. BRELSFORD, State Sanitarium.
To Camp Custer, Mich., base hospital, Capt. E. H. HAMMES, St. Paul.
To Camp Dodge, Iowa, Lieuts. M. R. SATHE, Jackson; K. C. WOLD, St. Paul.
To Camp Grant, Ill., as orthopedic surgeon, from Fort Oglethorpe, Lieut. H. E. HULLSICK, St. Paul.
To Camp MacArthur, Texas, to examine the command for nervous and mental diseases, Lieut. F. W. WHITMORE, St. Paul.
To Fort Oglethorpe, evacuation hospital from Camp Sevier, Capt. B. A. KAMP, Albert Lea. For instruction, Major H. M. MORTON, Lieuts. H. N. MELECK, Minneapolis; H. N. KLEIN, St. Paul; B. RAVN, Windom.
To report to the governor of Minnesota, as Medical Aide, Capt. A. MacLAREN, St. Paul.
To Washington, D. C., from Army Medical School, Lieut. P. BLANCO, Rochester.
Honorably discharged, Major E. S. GEIST, Capt. R. J. SEWALL, Minneapolis; Lieut. J. OHAGE, Jr., St. Paul.
The following orders have been revoked: *To Camp Crane, Pa.*, from Camp Dodge, Capt. C. E. CONNOR, Minneapolis. *To Camp Wadsworth, S. C.*, from Camp Dodge, Lieut. M. SEHAM, Minneapolis.

Mississippi

To Camp Hancock, Ga., Lieuts. R. PAINE, Aberdeen; G. T. WARREN, Brookhaven.
To Camp MacArthur, Texas, Capt. W. N. BLOUNT, Collins.
To Fort Oglethorpe for instruction, Lieut. E. A. GRICE, Crowder; from duty as an enlisted man, Lieut. T. E. PHILLIPS, Whynot.
To Fort Sam Houston, Texas, Lieut. E. L. RAWLES, Sherard.
To Fort Sheridan, Ill., base hospital, from Fort Sill, Capt. R. M. STEPHENSON, Lexington.
To Jackson Barracks, La., Capt. B. J. PLUNKETT, Jackson.
Resignation of Lieut. J. S. ADAMS, DeKalb, accepted.

Missouri

To Camp Dix, N. J., base hospital, Lieut. E. KOWALSKY, St. Louis.
To Camp Dodge, Iowa, Capt. E. POWERS, Carthage.
To Camp Gordon, Ga., as tuberculosis examiner, from Fort Thomas, Lieut. M. O. COOMBS, Joplin.
To Camp Logan, Texas, as tuberculosis examiner, from Camp Pike, Lieut. R. SHEETZ, Orrick, from Camp Travis, Capt. A. G. WAINRIGHT, St. Louis.
To Camp MacArthur, Texas, Capt. D. S. WERTH, Kirkwood; Lieuts. A. D. KNABB, Springfield; J. C. McINTIRE, St. Louis.
To Camp Pike, Ark., from Fort Riley, Lieut. T. P. GRONOWAY, Bevier. Base hospital, Capt. T. E. WYATT, Kansas City.
To Camp Sherman, Ohio, as orthopedic surgeon, from Fort Oglethorpe, Lieut. K. C. PEACOCK, St. Louis.
To Camp Wadsworth, S. C., from Camp Dodge, Capt. J. M. EPSTEIN, St. Louis.
To Fort Oglethorpe for instruction, Capt. R. S. TILLES, St. Louis; Lieuts. D. DAVIS, Joplin; F. L. DAVIS, Bonne Terre.
To Fort Riley for instruction, Capts. G. B. MITCHELL, Branson; R. W. SMART, Crane; J. J. O'KEEFE, H. B. MILLER, St. Louis; Lieuts. J. D. FERGUSON, Ava; J. R. PINION, Caruthersville; C. P. PICKETT, Mercer; W. F. MEYER, F. S. SETTLE, St. Louis; D. A. SEIBERT, Washington.
To Fort Sam Houston, Texas, Lieuts. N. ZOGLIN, Kansas City; H. H. HENDRICKS, St. Louis.
To Jackson Barracks, La., Capt. R. M. JAMES, Joplin.
To Millington, Tenn., Park Field, from Fort Oglethorpe, Lieut. G. C. BALCK, St. Louis.
To New Haven, Conn., Yale Army Laboratory School, for instruction, Capt. E. H. COON, Grand Pass.
To report to the commanding general, Central Department, Capts. E. L. MORGAN, Graham; J. F. DODSON, Kirksville; D. F. MANNING, Marshall.
Discharged, Lieut. E. A. HOEFER, Merceline.
The following order has been revoked: *To Fort Riley* for instruction, Capt. H. BRYAN, Carthage.

Montana

To Camp Meade, Md., base hospital, from Camp Lee, Lieut. W. G. DYE, Great Falls.
To Fort Riley for instruction, Lieut. M. HOPKINS, Gildford.

Nebraska

To Camp Bowie, Texas, base hospital, from Boston, Lieut. C. W. WAY, Wahoo.
To Camp Dodge, Iowa, Capt. G. H. GILMORE, Murray; Lieut. E. V. NEUMAN, Wausa.
To Camp MacArthur, Texas, Capt. L. C. ADCOCK, Omaha.
To Camp Wadsworth, S. C., from Fort Riley, Lieut. J. P. SWOBODA, Omaha.
To Camp Zachary Taylor, Ky., base hospital, Lieut. R. J. STEARNS, Omaha.
To Fort Oglethorpe for instruction, Capt. J. J. SNIPES, Lincoln.
To Fort Riley for instruction, Capts. E. I. WHITEHEAD, Holdrege; R. M. MORRILL, Lincoln; Lieut. J. E. INGRAM, Harvard.
To Fort Sam Houston, Texas, Lieuts. W. S. BARTHOLOMEW, Marion; J. C. STORRAN, Wilber.
The following order has been revoked: *To Fort Oglethorpe* for instruction, Lieut. R. L. SMITH, Lincoln.

Nevada

To report to the commanding general, Western Department, for assignment to duty, Lieut. W. B. MORROW, Stewart.

New Hampshire

To Fort Oglethorpe for instruction, from Boston, Major R. J. GRAVES, Concord.

New Jersey

To Camp Cody, N. M., base hospital, from Boston, Lieut. W. W. SCHMIDT, Cliffside.

To Camp Dodge, Iowa, from Fort Riley, Lieut. J. L. WILSON, Jersey City.

To Camp Logan, Texas, as tuberculosis examiner, from Camp Travis, Lieut. C. ENGLANDER, Cedar Grove.

To Camp Meade, Md., as tuberculosis examiner, from Camp Sheridan, Lieut. S. BARISHAW, Jersey City.

To Camp Zachary Taylor, Ky., as orthopedic surgeon, from Fort Oglethorpe, Lieut. T. L. CALDRONEY, Paterson.

To Fort Oglethorpe for instruction, Capt. F. BROUWER, Toms River; Lieuts. F. N. BUNNELL, Barnegat; M. M. MACLAIN, Belvidere; J. NYDES, Hilton; J. J. BRUNE, J. W. HURFF, O. A. MOCKRIDGE, Newark; H. N. GOLDING, Patterson; from Camp Upton, Lieut. L. D. WHITNEY, Belleville.

To Fort Slocum, N. Y., Lieut. P. B. MEANS, Trenton.

To Washington, D. C., as tuberculosis examiner, from Washington Barracks, Capt. H. M. EWING, Montclair.

New Mexico

To Camp Kearney, Calif., Lieut. F. H. JOHNSON, Carrozozo.

To Fort Oglethorpe for instruction, Capt. W. M. SCOTT, Alamogordo.

To report to the commanding general, Southern Department, for assignment to duty, Capt. M. M. CROCKER, Lordsburg.

To Washington, D. C., War College, from Camp Cody, Major J. J. REDDY.

New York

To Army Medical School for instruction, Lieut. R. E. CUMMING, New York.

To Azalea, N. C., from Markleton, Pa., Lieut. J. B. STENBUCK, Brooklyn.

To Camp Crane, Pa., from Camp Dix, Capt. W. G. DICKINSON, Oneonta; from Camp McClellan, Lieut. L. M. ALOFSIN, New York.

To Camp Custer, Mich., base hospital, Major W. M. FORD, New York.

To Camp Devens, Mass., base hospital, Lieut. R. D. RICHMAN, Morton.

To Camp Dix, N. J., base hospital, Lieut. G. S. LAIRD, Westfield.

To Camp Dodge, Iowa, evacuation hospital, from Camp Sheridan, Lieut. L. B. MATHEWS, Brooklyn.

To Camp Greene, N. C., from Fort Oglethorpe, Lieut. F. C. COSTEN, New York. Base hospital, Capt. E. W. KENNEDY, Rochester.

To Camp Hancock, Ga., base hospital, from Camp Sevier, Lieut.-Col. W. BENSELL, New York.

To Camp Jackson, S. C., from Camp Sevier, Capt. L. B. SACHS, New York. As orthopedic surgeon, from Fort Oglethorpe, Lieut. W. W. TRACEY, New York. Base hospital, from Camp Sevier, Major W. A. LAWRENCE, White Plains.

To Camp Lee, Va., as assistant to camp surgeon, from Southern Department, Lieut. E. KLINE, New York.

To Camp McClellan, Ala., Lieut. H. FRIEDLAND, New York; from West Raleigh, N. C., Lieut. V. W. WEISS, New York.

To Camp Meade, Md., Lieut. A. STONE, Brooklyn; from Fort McHenry, Lieut. J. D. VERILL, Brooklyn. Base hospital, Lieut. W. PHIPARD, New York.

To Camp Sevier, S. C., from Camp Joseph E. Johnston, Capt. G. S. SKIFF, Gainesville.

To Camp Shelby, Miss., from Camp Wadsworth, Lieut. S. D. EARHART, Clifton Springs. Base hospital, Lieut. M. KEMP, New York.

To Camp Sheridan, Ala., base hospital, from Fort Slocum, Capt. W. M. KENNA, Mount Vernon.

To Camp Sherman, Ohio, from Fort Oglethorpe, Capt. J. J. S. WALSH, New York. As orthopedic surgeon, from Boston, Lieut. H. J. FEASTER, Brooklyn; from Fort Oglethorpe, Lieut. C. L. McNEIL, Poughkeepsie. As tuberculosis examiner, from Fort Benjamin Harrison, Lieut. F. SAMPSON, New York.

To Camp Upton, N. Y., base hospital, from Boston, Lieut. A. H. JASON, Brooklyn. *To examine the troops* for cardiovascular diseases, from Camp Devens, Lieut. J. J. H. KEATING, New York.

To Camp Wadsworth, S. C., from Camp Dix, Lieut. F. M. KUJAWA, Buffalo.

To Dallas, Texas, Love Field, from Mineola, Lieut. D. D. STOWELL, New York.

To Fort Benjamin Harrison, Ind., Lieut. H. G. HOTCHKISS, Rochester. Base hospital, Capt. B. R. NAIRN, Buffalo; from Camp Lee, Major E. W. PINKHAM, New York.

To Fort Oglethorpe for instruction, Majors J. S. BILLINGS, Douglaston; F. W. YORK; Capts. L. H. SMITH, East Aurora; R. A. MILLER, Newburgh; E. A. MULLER, New York; F. S. WINSLOW, Rochester; A. E. CHACE, Tarrytown; Lieuts. L. L. KRANZER, J. B. L'EPISCOPO, Brooklyn; C. C. WILLIAMSON, Gorham; S. A. COMBAS, Hempstead; E. E. WRIGHT, Mendon; F. M. CHAFFEE, Middlesex; H. PAGE, Newburgh; W. J. DELANEY, W. L. FELT, B. HUGHES, M. J. MAYER, A. C. SCHWENK, I. N. SMERNOFF, New York; J. B. DEUEL, Rochester; N. B. PALEN, Walden; from Boston, Capt. J. L. BENDELL, Albany; from Fort Wayne, Lieut. J. J. LANCER, New York.

To Fort Snelling, Minn., base hospital, from Camp MacArthur, Capt. A. VANDER VEER, Jr., New York.

To Garden City, N. Y., Lieuts. E. B. O'KEEFFE, Albany; M. GROLLMAN, P. YUSKOWSKY, New York.

To Hoboken, N. J., Major G. H. KIRBY, New York; from Rockefeller Institute, Lieut. E. STILLMAN, New York.

To New Haven, Conn., Yale Army Laboratory School, from duty as an enlisted man, Lieut. D. M. MARKOWSKY, New York.

To Washington, D. C., from Camp Upton, Major R. L. CECIL, New York; from Camp Wheeler, Major H. R. GAYLORD, Buffalo; from Edgewood, Md., Major F. G. YOUNG, New York. American University Experimental Station, from Fort Oglethorpe, Lieut. H. W. RAYMOND, Franklinville. War College, from Camp Upton, Lieut.-Col. A. A. SCHOENLEBER.

To Williamsbridge, N. Y., and on completion *to Denver, Colo.*, from Azalea, N. C., Lieut. S. L. WANG, Staten Island; from Eastern Department, Lieut. J. J. STEINFELDER, New York.

Honorably discharged, Lieuts. A. FELDMAN, Brooklyn; H. ADLER, New York. On account of physical disability existing prior to entrance into the service, Capt. W. J. C. AUBRY, Cohoes.

Resignation of Lieut. J. D. VOORHEES, New York, accepted.

North Carolina

To Camp Hancock, Ga., Lieut. E. C. REITZEL, High Point.

To Camp Wadsworth, S. C., from Fort Oglethorpe, Lieut. J. M. EARNHARDT, Rockwell.

To Fort Oglethorpe for instruction, Capt. W. R. BAKER, Charlotte; from Hampton, Lieut. J. J. BAREFOOT, Graham.

To Rockefeller Institute for instruction in laboratory work, and on completion *to New Haven, Conn.*, Yale Army Laboratory School, from Fort Oglethorpe, Capt. W. P. JACOCKS, Elizabeth City.

The following order has been revoked: *To Hoboken, N. J.*, from Fort McPherson, Major F. M. HANES, Winston-Salem.

North Dakota

To Camp Dodge, Iowa, Capt. J. A. CARTHER, Warwick.

To Fort Riley for instruction, Lieut. W. C. AYLEN, Mandan.

To Fort Sam Houston, Texas, Lieut. A. DEAN, Grand Forks.

Ohio

To Camp Gordon, Ga., base hospital, Capt. E. E. GAVER, Columbus; Lieut. A. H. BERR, Cleveland.

To Camp Greene, N. C., as camp surgeon, from Camp Sherman, Major G. C. BEACH, Jr.

To Camp Hancock, Ga., Lieuts. N. B. OSBORNE, Andover; R. G. FOLLANSBEE, Cleveland; G. A. PARILLO, Girard; B. CLARK, Shandon.

To Camp McClellan, Ala., from Camp Shelby, Lieut. S. W. SAXTON, Steubenville; from Fort Oglethorpe, Lieut. A. M. SHAEFFER, Lancaster.

To Camp Meade, Md., base hospital, Capt. J. A. GOSLING, Tiffin.

To Camp Perry, Ohio, Lieut. G. R. WILKINS, Cleveland.

To Camp Sheridan, Ala., from Camp Lee, Lieut. F. C. PAYNE, Dayton.

To Camp Sherman, Ohio, base hospital, Major R. H. BIRGE, Cleveland.

To Camp Zachary Taylor, Ky., as orthopedic surgeon, from Fort Oglethorpe, Lieut. J. H. CHALAT, Cleveland.

To Fairfield, Ohio, Wilbur Wright Field, Lieut. J. G. MARTHENS, Dayton.

To Fort Oglethorpe, evacuation hospital, from Camp Sheridan, Capt. L. C. COSGROVE, Swanton; from Camp Sevier, Lieut. J. M. McGEORGE, Salem. For instruction, Capts. M. V. REPLOGLE, Bryan; F. J. WOOD, Cleveland; A. COHEN, Cleveland Heights; H. R. WRIGHT, Columbus; J. L. CANNON, Lima; Lieuts. L. E. STEPFIELD, Barberton; T. A. SPITLER, Carey; J. R. MONIHAN, Cleveland; L. M. HERSKOWITZ, E. HUFFER, G. H. SNYDER, Columbus; H. P. TIMBERLAKE, Demos; D. H. BOWMAN, Kenton; J. A. HEELEY, Parkman; A. TOMBAUGH, Williamstown. On completion *to his proper station*, from Garden City, Capt. J. W. TIPPLE, Cleveland.

To Fort Riley to examine drafted men for nervous and mental diseases, from Camp Pike, Lieut. G. H. REEVE, Cleveland.

To Fort Sam Houston, Texas, Lieut. C. S. WILMUTH, Mansfield.

To report to commanding general, Central Department, for assignment to duty, Capt. W. M. METZLER, Vanlue.

To Washington, D. C., for consultation, and on completion *to Camp Sherman, Ohio*, from Rockefeller Institute, Capt. W. C. GATES, Bucyrus. War College, from Camp Sherman, Major H. B. McINTYRE.

The following order has been revoked: *To Camp McClellan, Ala.*, from Walter Reed General Hospital, Major D. M. ROBERTS, New Richmond.

Oklahoma

To Camp Dodge, Iowa, Capt. J. S. LITTLE, Minco.

To Camp MacArthur, Texas, Capt. T. H. FLESHER, Edmond.

To Fort Oglethorpe for instruction, Lieut. G. M. WILKINSON, Delaware.

To Fort Riley for instruction, Lieuts. J. T. KING, Bokosho; S. W. REYNOLDS, Drumright; T. H. McCARLEY, McAlester; P. C. McCALL, O'Keene; H. M. REEDER, Shawnee.

To Fort Sill, Okla., base hospital, from Camp Travis, Lieut. T. J. NUNNERY, Granite.

To report to the commanding general, Southern Department, Capts. F. L. WATTS, Muskogee; H. B. GWIN, Tulsa.

To Rockefeller Institute for instruttion in laboratory work and on completion *to New Haven, Conn.*, Yale Army Laboratory School, from Fort Oglethorpe, Capt. G. ELLISON, Norman.

Oregon

To Azalea, N. C., from New Haven, Lieut. F. R. MENNE, Portland.

To Camp Lewis, Wash., base hospital, Capt. T. H. COFFEN, Portland.

To Dallas, Texas, Love Field, from Mineola, Capt. H. L. UNDERWOOD, La Grande.

To Potomac Park, D. C., from Army Medical School, Lieut. F. J. BROWN, Vale.

Pennsylvania

To Boston, Mass., Harvard Graduate School of Medicine, for instruction, from Fort Oglethorpe, Capt. W. M. HOLTZ, Pittsburgh.

To Camp Crane, Pa., from Camp Gordon, Lieut. I. A. DARLING, Warren.

To Camp Custer, Mich., base hospital, Capt. G. E. BOYD, Philadelphia.

To Camp Devens, Mass., as orthopedic instructor, and on completion *to Boston, Mass.*, Harvard Graduate School of Medicine, for instruction, from Fort Oglethorpe, Capt. W. H. HOLTZ, Pittsburgh.

To Camp Dodge, Iowa, as orthopedic surgeon, from Boston, Lieut. J. P. MAUS, Philadelphia. Base hospital, from Camp Meade, Capt. J. S. HAMMERS, Danville; from Fort Oglethorpe, Major A. DARE, Philadelphia.

To Camp Gordon, Ga., base hospital, Capt. J. BEATTIE, Lebanon; Lieut. H. S. BACHMAN, Philadelphia.

To Camp Jackson, S. C., from Camp Devens, Capt. J. H. WHITCRAFT, Wilkinsburg.

To Camp McClellan, Ala., Capt. G. T. McGRAW, Avondale; from Camp Sevier, Lieut. R. F. WIVELL, Wilkes-Barre; from Fort Oglethorpe, Lieut. F. B. BLOCK, Philadelphia.

To Camp Meade, Md., Lieuts. J. F. GORMAN, G. W. A. HESS, Philadelphia.

To Camp Sherman, Ohio, from Camp Wadsworth, Lieut. H. GOODFRIEND, Scranton. As camp surgeon, from Camp Dodge, Major B. F. DUCKWALL, Pittsburgh. As orthopedic surgeon, from Boston, Lieut. E. H. McCLISTER, Kittaning.

To Camp Wadsworth, S. C., from Camp Lee, Lieut. A. R. SERAPHIN, Pittsburgh; from Columbus Barracks, Lieut. W. T. PALCHANIS, Pittsburgh.

To Camp Zachary Taylor, Ky., from duty as a private, Lieut. J. J. QUINN, Wilkes-Barre.

To Cleveland, Ohio, Lakeside Hospital, from Camp A. A. Humphreys, Lieut. S. P. REIMANN, Philadelphia; from Fort Oglethorpe, Lieut. A. A. REDELIN, Freeland.

To Dallas, Texas, Love Field, from Mineola, Lieut. G. S. CUNNINGHAM, Pittsburgh.

To Fort McPherson, Ga., from Boston, Lieut. W. C. ELY, Philadelphia.

To Fort Oglethorpe for instruction, Capts. C. C. RINARD, Munhall; W. B. DAVIS, L. VAN HORN, Philadelphia; Lieuts. E. L. WHISTLER, Carlisle; R. L. ANDERSON, Dormont; W. M. GARRETSON, East Petersburg; A. J. CRAIG, Fort Washington; P. T. HOPE, Mercer; I. E. PRATT, Millerton; A. F. BECK, H. J. FORMAN, Jr., E. S. HUBBS, Philadelphia; A. W. CROZIER, E. N. FOSTER, G. A. ZIEG, Pittsburgh; R. S. HEILMAN, Sharon; F. W. GUSTITES, Shenandoah; D. H. EDWARDS, Washington; from Camp Joseph E. Johnston, Capt. S. B. HARRIS, Norwood Station.

To Fort Ontario, N. Y., Lieut. M. A. NEWMAN, Wilkinsburg.

To Fort Sam Houston, Texas, Capt. G. C. McMASTER, Pittsburgh.

To Garden City, N. Y., Capt. W. L. SCOTT, Joffre; Lieut. J. A. DOUGLAS, McDonald; C. LAM. SANTEE, Wapwallopen; W. C. SMITH, Woodbine.

To Hoboken, N. J., from Camp Meade, Lieut. S. J. ROBERTS, Etters.

To Lakewood, N. J., Lieut. C. W. ESPY, Wilkes-Barre.

To New Haven, Conn., Lieut. I. C. STALBERG, Philadelphia.

To New York, Bellevue Hospital, for instruction, and on completion to *Camp Dix, N. J.,* base hospital, Capt. S. A. RULON, Phoenixville.

To report to the commanding general, Eastern Department, Capt. G. J. VAN VECHTEN, Scranton.

To Walter Reed General Hospital, D. C., Lieut. E. H. BEDROSIAN, Philadelphia.

To Washington, D C., Major R. M. PEARCE, Philadelphia. American University, Experimental Station, Lieut. C. S. ORRIS, Tarentum.

Philippine Islands

To Camp MacArthur, Texas, as camp surgeon, from Camp Fremont, Major W. P. DAVENPORT, Cebu.

Porto Rico

To Camp Las Casas, P. R., Lieuts. P. S. MALARET, Ponce; E. CUMPIANO, Rincon.

To Camp Wadsworth, S. C., from Camp Meade, Lieut. J. H. FONT, Barronquitas.

South Carolina

To Camp Hancock, Ga., Lieut. J. E. LAND, Anderson.

To Camp Sheldy, Miss., base hospital, Lieut. V. W. BRABHAM, Orangeburg.

To Fort Oglethorpe for instruction, Lieuts. B. J. WORKMAN, Charleston; G. H. WALTER, Orangeburg.

To Washington, D. C., War College, from Camp Jackson, Lieut.-Col. L. R. POUST; from Camp Wadsworth, Lieut.-Col. J. F. JOHNSTON.

South Dakota

To Camp Crane, Pa., from Camp Grant, Lieut. A. F. GROVE, Dell Rapids.

To Camp Dodge, Iowa, Lieut. A. S. JACKSON, Lead.

To Fort Oglethorpe for instruction, from Boston, Lieut. L. J. BROOKMAN, Vermilion.

To Fort Sam Houston, Texas, Lieut. F. H. CREAMER, Dupree.

To report to the commanding general, Central Department, Capt. J. F. BARTHELL, Winfred.

Tennessee

To Camp Hancock, Ga., Lieut. L. R. SHEARIN, Memphis.

To Camp Lee, Va., as assistant to the camp surgeon, from Southern Department, Lieut. C. D. ALLEN, Memphis.

To Camp Logan, Texas, as tuberculosis examiner, from Camp Pike, Lieut. M. L. CONNELL, Nashville.

To Camp Sheldy, Miss., base hospital, Capt. W. C. McREE, Trenton.

To Camp Sherman, Ohio, base hospital, Lieut. O. W. ROGERS, Knoxville.

To Fort Oglethorpe, evacuation hospital, from Camp Upton, Capt. H. H. SHOULDERS, Nashville; from Fort Screven, Capt. C. D. BLASSINGAME, Memphis.

To New Haven, Conn., Yale Army Laboratory School, for instruction, Lieut. A. T. SIKES, Franklin.

To New York, Hospital for Ruptured and Crippled, for instruction, from Boston, Capt. J. R. SHELTON, Oliver, Springs.

Texas

To Boston, Mass., Harvard Graduate School of Medicine, for instruction, from Fort Oglethorpe, Lieut. O. N. MAYO, Belton.

To Camp Bowie, Texas, base hospital, Capt. J. W. HALE, Waco.

To Camp Dodge, Iowa, base hospital, from Fort Benjamin Harrison, Lieut. E. C. BRANNON, Waco.

To Camp Jackson, S. C., base hospital, Major W. RALSTON, Houston.

To Camp Kearney, Calif., Lieut. O. C. MICHIE, Childress; from Fort Riley, Lieut. R. E. CROMEANS, Strawn.

To Camp MacArthur, Texas, base hospital, from Boston, Capt. H. R. DUDGEON, Waco.

To Camp McClellan, Ala., from Fort Oglethorpe, Lieut. L. W. EDWARDS, Nashville.

To Camp Pike, Ark., as orthopedic surgeon, from Camp Bowie, Lieut. F. W. CARRUTHERS, Hillsboro.

To Camp Sherman, Ohio, from Fort Oglethorpe, Capt. C. P. MARTIN, Palestine.

To Corpus Christi, Texas, from Fort Oglethorpe, Lieut. H. F. WILKINS, Fort Worth.

To Fort Oglethorpe for instruction, Capts. W. F. GABERT, Hereford; H. H. ALLDREDGE, Higgins; A. L. RIDINGS, Sherman; Lieuts. G. HOGG, Edna; G. G. CASTLEBERRY, Post; E. P. GOODE, Quinlan; H. P. RUSH, San Angelo; I. B. JOHNSON, Texline; I. E. COLGIN, Waco.

To Fort Riley for instruction, Lieuts. J. A. NEELY, Bellville; W. M. CRUMPLER, Port Arthur; A. C. BAIRD, Wolfe City.

To New York, Hospital for Ruptured and Crippled, for instruction, from Boston, Capt. J. H. SHELTON, Kingsville.

To report to the commanding general, Eastern Department, from Camp Upton, Major S. NORMAN, Texas City. Southern Department, Capts. S. D. BULLINGTON, Dallas; M. C. BELL, Odessa.

To Washington, D. C., War College, from Camp MacArthur, Lieut.-Col. J. T. AYDELOTTE.

Honorably discharged on account of physical disability existing prior to entrance into the service, Capt. J. W. HILL, Dallas.

Utah

To Camp Lewis, Wash., base hospital, Capts. H. B. FELTS, H. C. JORGENSON, Salt Lake City.

Vermont

To Camp McClellan, Ala., Lieut. S. K. GRAY, East Arlington.

To Fort Oglethorpe for instruction, Capts. C. H. BURR, Montpelier; R. H. MINER, Windsor; Lieut. W. S. SLICER, Roanoke.

To Garden City, N. Y., Lieuts. R. M. WELLS, Orleans; R. H. BURKE, St. Johnsbury.

To Lakewood, N. J., for instruction at the Cardiovascular School, Lieut. R. E. AVERY, East Barre.

To Walter Reed General Hospital, D. C., Capt. W. J. TINDALL, Montpelier.

Virginia

To Camp Beauregard, La., from Camp Joseph E. Johnston, Lieut. M. S. FITCHETT, Norfolk.

To Camp Pike, Ark., as orthopedic surgeon, from Fort Oglethorpe, Lieut. W. I. LAUGHON, Bedford.

To Fort Oglethorpe for instruction, Lieuts. E. M. CHITWOOD, Austinville; T. A. WILLIAMS, Middleton.

Washington

To Camp Kearney, Calif., Capt. I. A. WEISHBRODT, Seattle; Lieuts. R. BARTEAU, Rockford; J. P. LOUDON, Yakima; J. R. SHUMAN, Sunnyside.

To Fort Oglethorpe for instruction, Capt. L. B. BALDWIN, Seattle.

To Fort Riley for instruction, Lieuts. E. L. BRINSON, Acme; T. H. R. RUNNALLS, Puyallup; L. D. LONG, Seattle.

To report to the commanding general, Western Department, Capts. J. E. PRENCEL, St. John; A. G. SNOW, Seattle; Lieut. W. R. SIMMONS, Port Townsend; from San Francisco, Major J. C. BYRNE, Spokane.

West Virginia

To Camp Grant, Ill., as orthopedic surgeon, from Fort Oglethorpe, Lieut. L. E. DAUGHERTY, Davis.

To Camp Shelby, Miss., base hospital, Capt. F. D. FORTNEY, Newberg.

To Camp Wadsworth, S. C., from Camp Lee, Lieut. H. E. WHALEY, Hansford.

Wisconsin

To Camp Crane, Pa., from Camp Upton, Lieut. A. T. JOHNSON, Sauk City; from the Surgeon-General's Office, Major R. H. IVY, Milwaukee.

To Camp Dodge, Iowa, Capt. W. L. STEPHENSON, Ladysmith; Lieuts. E. A. LAPHAM, Rib Lake; G. PARKE, Viola.

To Camp Greene, N. C., to examine the troops for cardiovascular diseases, from Camp Lee, Lieut. E. A. GATTERDAM, Wauwatosa.

To Camp Joseph E. Johnston, Jacksonville, Fla., base hospital, from Fort Oglethorpe, Capt. B. F. HOYT, South Kaukauna.

To Camp Sherman, Ohio, as tuberculosis examiner, from Fort Benjamin Harrison, Capt. H. C. MIX, Green Bay.

To Fort Oglethorpe for instruction, Capt. C. W. GIESEN, Superior; Lieuts. K. H. TRIPPETT, Buchannon; R. G. HAYS, Friendly; J. F. McNARY, Milwaukee; H. T. SCHLEGEL, Wausaw.

To Fort Riley for instruction, Capts. W. H. FINNEY, Clintonville; W. M. GRATIOT, Mineral Point; F. C. HANEY, Watertown; Lieuts. P. LEICHT, Lake Mills; A. C. NIEMANN, New Holstein.

To Markleton, Pa., from New Haven, Capt. L. W. DUDLEY, Milwaukee.

To Mineola, N. Y., from Madison, Major J. A. E. EYSTER, Madison.

Wyoming

To Fort Riley for instruction, Capt. N. B. NEWCOMER, Sheridan.

To Rockefeller Institute for instruction in laboratory work, and on completion to *New Haven, Conn.,* for instruction, from Camp Beauregard, Lieut. J. F. O'DONNELL, Casper.

Survey of Illness.—The recent influx of negroes into Philadelphia has been a great factor in the city's increasing mortality as well as morbidity. According to the report of Dr. Charles Scott Miller, Chief of the Bureau of Vital Statistics, who, with the aid of registered nurses, has just completed the first illness survey ever made in this city, 514 persons, out of the 12,109 canvassed, were found to be ill. The report further states: The proportion of negroes to whites who were affected with pulmonary conditions is surprisingly high. Colds, bronchitis, grip, etc., run in some cases more than 50 per cent. higher in the negro than in the white. Many are classed under the heading "colds," which should properly be classed under the heading "tuberculosis." On the other hand, bronchitis and asthma are frequent diagnoses among this class of persons to "cloak" real tuberculosis. Under the auspices of the Philadelphia committee, a movement recently was launched among negroes for the purpose of checking the spread of tuberculosis and thereby improving the general health of the city.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

CALIFORNIA

Medical College Suspended.—A letter from the College of Physicians and Surgeons of San Francisco states that the college has been suspended.

Personal.—Dr. Clarence A. DePuy, Oakland, has been appointed physician of Alameda County, succeeding Dr. Carl E. Curdts, who has entered the military service.——Dr. Harrison A. Putnam, Inglewood, was struck by an auto truck, while crossing the street, August 8, and was seriously injured. He is being cared for at the Pacific Hospital.

Osteopathic College Not Recognized as Medical School.—A recent communication from the secretary of the California State Board of Medical Examiners states that the College of Osteopathic Physicians and Surgeons of Los Angeles is no longer recognized as a medical school, and that after Aug. 1, 1918, graduates of that school will not be admitted to examinations for licenses as physicians and surgeons.

COLORADO

State Society Meeting.—The forty-eighth annual meeting of the Colorado State Medical Society will be held at Hotel Stanley, Estes Park, September 9 to 11, under the presidency of Dr. Edward Jackson, Denver. Among the papers on the program are those of Lieut. Horace G. Wetherill, M. C., U. S. Army, Denver, medical aide to the governor, on "The Nation's Need of Doctors and Nurses for the Army," and "The Work of the Army Tuberculosis Boards," by Dr. Oscar M. Gilbert, Boulder. Dr. Wetherill will also confer with the the members of the local advisory boards during the meeting, regarding the rulings and provisions of the Provost Marshal-General's Office, and will be prepared to examine applicants for commission in the Medical Reserve Corps. Members of the local medical advisory boards from Wyoming and other adjoining states have been invited to be present at the meeting. Lieut.-Col. John R. Barber, M. C., U. S. Army, chief surgeon at Fort Logan will be guest of honor at this meeting.

DISTRICT OF COLUMBIA

No Commissions at Present for Colored Physicians.—The new draft legislation seriously affects the Washington colored doctors, of whom there is a relatively large number. For a number of months past no commissions as medical officers have been granted to physicians of that race on the ground that the proportion of medical officers for negro troops has already been enrolled. A committee recently sought relief from the Secretary of War for this situation but were informed that there is at present no prospect that more colored medical officers will be needed. This leaves many negro physicians who have vainly volunteered to serve as medical officers face to face with the prospect of being inducted into service by draft.

Honor to Memory of Senator Gallinger.—On August 26, the Washington Board of Trade held a special meeting to pay homage to the memory of the late Senator Jacob H. Gallinger. Resolutions were adopted, voicing the appreciation of the people of the District of Columbia of the distinguished services of Senator Gallinger as a national legislator and especially of the deep interest he had in the affairs of this district and the sympathetic understanding he always displayed of the needs of the city of Washington. This event was of special interest to the medical profession both because Senator Gallinger was himself a physician and because he could always be relied on to further the interests of physicians in legislation affecting them. He was largely instrumental in securing the necessary appropriations for a much needed new and enlarged municipal hospital for Washington, which when completed will be known as the Gallinger Hospital. One of the last acts of his legislative life was to secure the passage by the Senate of an act incorporating the Medical Society of the District of Columbia. This bill (still pending in the House of Representatives) is intended to revive a charter granted the medical society in 1817 and in the interest of historical continuity its passage is much desired by the local profession.

GEORGIA

Practice Act Amended.—Amendments have recently been made to the Georgia Medical Practice Act. Besides correcting certain ambiguities in the law it increases the requirement of preliminary education in the state to two years of college work for all students matriculating in and after the session of 1919-1920; provides for the recognition of certificates granted by the National Board of Medical Examiners, and provides for the revocation of the license of any physician convicted of violating the Harrison Narcotic Law.

District Society Meeting.—At the midsummer meeting of the First District Medical Society, held in Savannah, August 20, Major William C. Lyle, Augusta, medical aide to the governor and supervisor of medical advisory boards of the state, addressed the physicians on the part they are playing in the war, and the following officers were elected: president, Dr. J. Lawton Hiers, Savannah; vice presidents, Drs. William W. Evans, Halcyon Dale, and Harry Y. Righton, Savannah, and assistant secretary and treasurer, Dr. Victor H. Bassett, Savannah, succeeding Dr. Lehman W. Williams, who has entered the military service.

ILLINOIS

Sheridan to Be Reconstruction Hospital.—The War Department, August 21, announced plans for establishing a reconstruction hospital at Fort Sheridan at the close of the student training camp which is now in progress. At the outset the hospital will have a capacity of 1,000 beds, and provisions have been made for an eventual increase to a capacity of 4,000 or 5,000 beds.

Urges Birth Registration.—The Illinois Department of Public Health has discovered that in one county alone in 1917 more than 500 births were improperly reported to the county clerk instead of to the local registrars. The department has therefore written to every county clerk asking for immediate reporting of the stillbirths and deaths recorded in the county clerk's office from Jan. 1, 1917, to July 1, 1918.

Chiropractor Convicted.—A communication from the Department of Registration and Education states that James E. Kane of Decatur, a chiropractor, was fined $500 and costs in the county court of Macon County for treating human ailments without a license. The communication states that Mr. Kane was one of the most flagrant and persistent violators of the laws of Illinois, claiming that in as much as he did not prescribe or administer drugs, it was not necessary for him to hold a license to practice. The case was tried three times before a unanimous verdict against Kane was obtained.

Chicago

Typhoid Carrier Delays Tunnel Opening.—The delay of two weeks in the opening of the Wilson Avenue tunnel and the Mayfair pumping station was due to the discovery that one of the workmen was a typhoid fever carrier.

Alleged Quacks Arrested.—Five persons were arrested in Chicago, August 24, on various charges of practicing medicine without a license. These were "Dr." August Laroich, 1333 Milwaukee Avenue, who is said to have been doing business under the title of the "Associated Doctors"; Dr. Maryan, 906 Milwaukee Avenue, whose specialty is said to have been "mystic bars"; "Dr." Helena Grawin, Fifty-First and Paulina streets, said to be a recent graduate of the chiropractic school operated by Dr. William L. LeBoy, whose license to practice was revoked, August 21 ("Dr." Grawin's specialty is said to have been drugless healing); "Dr." Stanley Kreizer, said to be a "professor of massage and water cure," and "one dentist," a Dr. Nickerson, proprietor of the "Nickerson Dentists" in South Chicago.

MASSACHUSETTS

Personal.—Dr. Francis D. Hart, Worcester, has been appointed associate medical examiner (coroner) to succeed Dr. Ernest L. Hunt, who has resigned to enter the military service.——Dr. Howard P. Bellows, Newtonville, was operated on recently at the Massachusetts Homeopathic Hospital, Boston.——Dr. Jeremiah J. Paglia, Worcester, was the guest of honor at a dinner, August 13. Dr. Paglia has been ordered to duty at Camp Devens, Ayer.——Dr. Frank E. Wheatley, North Abington, has been assigned to duty as medical aide to the governor.

MINNESOTA

Personal.—Dr. Edward W. Buckley, St. Paul, supreme physician of the Knights of Columbus, has returned after six

months' survey of the Knights of Columbus war work in France.

Clinic for Masaba Region.—A tuberculosis clinic is to be held in Hibbing this month at which all pre-tubercular cases will be studied. The work will be directed by the local profession in cooperation with the state board of health.

MONTANA

Action on Venereal Diseases.—The state board of health has adopted regulations characterizing syphilis, gonorrhea, and chancroid, as communicable diseases and requiring that all cases be reported, with provisions for quarantine in extreme cases.

Infantile Paralysis Clinic.—During the Montana State Fair, at Helena, Miss Marion Fox, Boston, gave instruction in the after-treatment of infantile paralysis. This work was conducted by the state board of health in cooperation with the management of the State Fair.

Initiative Chiropractic Petition.—The people of Montana are to have the opportunity, Nov. 5, 1918, to vote on the establishment of a law regulating the practice of chiropractic. It appears from the arguments against this measure that the bill providing for the licensing of practitioners of this cult has been repeatedly voted down in that state. It is quite probable that the same result will follow this effort and that the bill will not be enacted.

Free Tuberculosis Examination.—A free clinic for the examination of those suspected to be affected with tuberculosis was held at the court house of Blaine County, Chinook, August 12, under the auspices of the state board of health and the Montana Anti-Tuberculosis Society. Montana has only one state sanatorium, at Galen, which has accommodation for seventy patients, with no provision for incipient cases or for children. There is already a waiting list of 200.

NEW YORK

Cooperstown Institution for Government.—Edward S. Clark of Cooperstown, N. Y., has offered the government the use of the Mary Imogene Bassett Hospital and Pathological Laboratory for the period of the war and one year after. The government has accepted this offer and will use the institution as a general hospital in which special attention will be given to nervous conditions among aviators. An additional hospital building is in process of erection, and will be ready for occupancy early in 1919. Mr. Clark will provide 100 beds and full equipment for caring for them. The balance of the equipment will be furnished by the government. Mr. Clark's only stipulation as to the use of the hospital and grounds is that the government shall not intentionally bring any contagious diseases there. He has placed a small hotel at the disposal of the government until the new buildings are ready for occupancy.

New York City

Violate Harrison Drug Law.—Dr. Emil H. Keidanz and Dr. Solomon Rothman have been arrested and held on $7,500 bail on charges of conspiring to violate the Harrison Drug Law. These men conduct a pharmacy which it is alleged has sold $150,000 worth of habit-forming drugs during the last year. Most of the testimony on which the complaint was based was given by drug addicts. The defendants denied their guilt.

Red Cross Ambulance Service.—An emergency ambulance service for transporting sick and wounded men from transports and railway terminals to hospitals has been organized by the New York County chapter of the American Red Cross. The service is provided through its Motor Corps, which is one of the thirty-five similar organizations in the territory of the Atlantic Division. During the past week the Motor Corps has acquired sixteen new ambulances.

Personal.—Dr. Dudley H. Morris has been appointed police surgeon on probation to succeed Dr. Archibald Smith, resigned.——Dr. Gustav F. Boehme, Jr., has been named temporary police surgeon in place of Dr. Edward T. Higgins, who has been commissioned Captain in the Army Medical Corps.——Dr. Caroline S. Finley, head of the Women's Overseas Hospitals and two doctors of her staff, have been decorated with the French Croix de Guerre for bravery during an enemy air raid.

New York Hospitals Confer with Surgeon-General's Office.—After word had been received from the Surgeon-General's Office that plans had been developed for calling out hospital interns and a certain number of advanced and intermediate medical students, the Hospital Conference of New York held a meeting, August 26, at which it was voted to send a committee to Washington to confer with the Surgeon-General for the purpose of forming a definite plan to furnish the greatest amount of medical and nursing aid to the Army without disorganizing civil hospitals. The Hospital Conference issued a statement setting forth the difficulties under which the hospitals of the city are laboring at the present time, and notes that the War Industries Board has declared that the motion picture business in all of its branches is an essential war industry, yet it has not occurred to any officer of the government to show equal consideration of the hospitals of the country as instruments of public service. An appeal is made to the President of the United States "To direct the War Industries Board, the Provost Marshal-General and the Surgeon-General of the United States Army to formulate, in accordance with existing laws, regulations which, while giving due precedence to immediate military needs, will nevertheless preserve the integrity of the civil hospitals of the country as instruments of public service, essential to the immediate care and comfort of the civil population, and necessary to the conduct of the war, in relation to which the hospitals serve as training schools for medical officers and nurses." The heads of several hospitals belonging to a committee, acting for the American Hospital Association and the Hospital Conference of New York, are working on a standard course of training for hospital assistants in six months for duty in France. It will be urged that hospitals which have not engaged specially in training hospital aids should adopt intensive six months' courses, substituting practical work largely for lecturing.

NORTH CAROLINA

Leonard Medical College Suspended.—A circular letter sent out by President Meserve of Shaw University recommends a temporary discontinuance of Leonard Medical College. The money heretofore expended in that school will be directed toward the further development of the other departments of the university.

Did Not Report Typhoid Fever.—Seven physicians of Robeson County are said to have been convicted during August for violation of the State quarantine law, in that they failed to report cases of typhoid fever as required by the statute. The physicians named are Drs. Nathan H. Andrews, Rowland; Henry H. Hodgin, Roscoe D. McMillan, and Benjamin F. McMillan, Red Springs; William F. Stephens, Fairmont; Daniel S. Currie, Parkton, and Wyatt P. Exum, Goldsboro. ——It is said that there have been 150 cases of typhoid fever with eleven deaths among the German civilians and sailors interned at Hot Springs.

NORTH DAKOTA

New Board Members.—Governor Frazier has made the following appointments to fill the vacancies in the state board of medical examiners: Dr. Hugo O. Altnow, Mandan, succeeding himself; Dr. Henry G. Woutat, Grand Forks, to succeed Dr. John N. Ewbank, Rhame, and Francis Peake, Jamestown, to succeed Dr. William J. Breigs, Edgerley.

Supreme Court Decides Against Doctors.—In a decision granted by the Supreme Court, August 14, in the case of W. A. Beardsley versus Drs. Fred E. Ewing and John Ewing, physicians of Kenmare, in which damages were claimed on account of alleged mistreatment in a case of disease of the eye, the decision of the district court is said to have been affirmed which awarded the complainant $7,500 damages.

OHIO

Work on Contagion Unit of Hospital.—Plans to hurry operation on the contagious disease unit of the proposed Youngstown Municipal Tuberculosis Hospital were approved at a joint meeting of the organizations and officials, August 9. Recommendation was made to the state safety director that he at once advertise for bids for the proposed unit, and a committee was appointed to make a statement of the situation to the war chest council, which is to be asked to lend for the completion of the building the difference between the $25,000 now available in the city treasury, and the cost of the building, which is estimated at $45,000 or $50,000. Plans provide for a one-story structure with foundations sufficient for the addition of three or four stories later.

Personal.—Dr. Casper H. Benson, Columbus, physician of Franklin County, and Dr. Stephen A. Douglass, superintendent of the State Hospital at Mt. Vernon, will soon leave for Italy as a part of the commission of fifteen American phy-

sicjans to be associated in sanitary work.——Dr. Louis J. Wise, Akron, was assaulted in his office and robbed, August 23.——Dr. Daniel W. Philo, Fremont, who underwent operation at St. Vincent's Hospital, recently, is reported to be convalescent.——Dr. Albert H. Herr, Lima, has withdrawn as a candidate for lieutenant governor on the Republican ticket, on account of accepting a commission in the Medical Reserve Corps of the Army.——Dr. Thurman H. Lautenschlager, Youngstown, chief surgeon of the Sharon Steel Hoop Company, has resigned to accept a position in the department of rehabilitation and reconstruction with the government.——Dr. Anderson L. Smedley, health officer of Hamilton since 1912, has resigned to enter the medical service, and has been succeeded by Dr. Henry Krone.

PENNSYLVANIA

Officers Elected.—The Sixteenth Censorial District Medical Society held its eighth meeting at Sayre, July 9. Dr. Donald Guthrie, Sayre, was elected chairman and Dr. Herbert L. McKown, Tunkhannock, secretary for the next meeting.

Personal.—Dr. Edward R. Walters, formerly director of health and charities at Pittsburgh, has been appointed medical adviser to the state workmen's compensation board of the western Pennsylvania district, with headquarters at Pittsburgh.——Dr. Roscoe F. Mauser, Fountain Springs, former resident surgeon at the Shamokin City Hospital, but who has been in service in France for two years, first with the French Ambulance Corps and later with the American Ambulance Corps, has been awarded the Croix de Guerre.——Dr. Thomas B. Kern, Bethlehem, who entered the Medical Reserve Corps last August, has been located in a German prison camp.

Philadelphia

Personal.—Dr. Wilmer Krusen, director of Public Health and Charities, who applied for an appointment in the Medical Reserve Corps, has been denied the appointment as the government considers his services more valuable in Philadelphia's war work.——Dr. Israel W. Rothberg has been appointed a clinical assistant physician to the Philadelphia General Hospital.——Dr. J. Milton Griscom has been elected secretary of the Wills Hospital Ophthalmic Society, succeeding Dr. Harold W. How, resigned.

CANADA

Beland Returns from Captivity.—Hon. Dr. Henri S. Beland, formerly postmaster-general of the Dominion, has returned after three years' captivity in Berlin, during which time he served as assistant to the prison physician.

Four Professorships Endowed.—A recent endowment to the University of Toronto provides a sum of between $500,000 and $750,000 for the establishment of four special chairs to be held by full-time professors. These chairs are, respectively, pediatrics, gynecology, orthopedic surgery, and a fourth to be determined.

Municipal Hospital Act for Alberta.—The Municipal Hospital Act is already in operation in Alberta; four government nurses are already in the field. Edmonton and Calgary will have among their exposition features a demonstration of public health work under the direction of these nurses, and talks on general health lines will be given, together with a display of literature and posters.

Canadian Hospital in France.—The Canadian people through the Canadian Red Cross have established a new Canadian hospital at Joinville-le-Pont near Paris, with accommodation for 500 patients and possibilities for further extension under canvas. The hospital will be under the command of Col. George E. Beauchamp, assisted by Lieut.-Col. Zephyr Rheaume, as chief of the surgical staff, and Lieut.-Col. Jean P. Decarie as chief of the medical staff, all of Montreal.

Psychopathic Institution for Winnipeg.—The General Finance Committee for Winnipeg recently held a meeting to award a contract for the construction of the new psychopathic institute, to be established in Winnipeg, which is to be used for the care and treatment of soldiers from Manitoba, who are suffering from psychopathic conditions. The Provincial government voted $50,000 two years ago for the establishment of this institution, but a sum exceeding this amount will be required. This excess will be provided for by a special vote at the next session of the Provincial legislature.

Hospital News.—Hereafter no alien enemies in Toronto will receive free treatment in any of the hospitals of that city.——A new military hospital is to be established at Ongwanada, Ont. It will have 1,000 beds The grounds and building have been donated by the Maple Leaf Milling Company of Toronto.——According to Col. Clarence Starr the surgery of the war is distinctly orthopedic. The Canadian government is establishing five orthopedic hospitals in Canada, namely, at Toronto, Halifax, Montreal, Winnipeg and Vancouver. The Toronto institution will have a capacity for 1,500 beds.——Work on the Rosedale Military Hospital, Toronto, commenced about the middle of July. It will provide accommodation for 2,000 soldiers.

Personal.—Dr. Frederick N. G. Starr, Toronto, has gone overseas to join the Royal Army Medical Corps.——Capts. Donald T. Fraser, M. C., and W. G. Shepherd, Toronto, who have been with the British expedition at Wei Hai Wei, China, have been commended by the Militia Department, Ottawa, for valuable services rendered to the natives in that area.——Capt. William E. Ogden, chief medical officer, Spadina Military Hospital, Toronto, has been advanced to the rank of major.——Dr. Grant Cunningham, a former Army medical officer, has succeeded Dr. C. A. MacKay as medical officer of the Invalided Soldiers' Commission, Toronto.——Col. Arthur E. Snell, Toronto, received the D. S. O. two years ago, and has recently been awarded the Order of Companion of St. Michael and St. George.——Dr. Simeon E. Grondin, Quebec City, has been elected president of the Canadian Medical Association. The association will meet in Quebec City in 1919, for the first time in nearly twenty-five years.——Col. Wilbert G. Fraser, Ottawa, has been appointed A. D. M. S. of the Petawawa Camp near that city.——Dr. C. A. MacKay, Toronto, has left for St. John, N. B., where he will be medical director for the Invalided Soldiers' Commission in New Brunswick.——Dr. George L. Hodgins, for some time on the staff of the Toronto Free Hospital for Consumptives, Weston, Ont., has left for the Pacific Coast where he will reside and practice in the future.——Capt. Benjamin L. Guyatt, of the Toronto Military Base Hospital, was recently made M. O. C., Camp Borden, Ont.

FOREIGN

Meeting of French Surgical Association.—The Twenty-Seventh French Surgical Congress is to convene at Paris, October 7 to 10. Three subjects have been appointed for discussion, namely, extraction of projectiles in the chest; treatment and remote results of war wounds of nerves, and removal of splinters and repair of losses of bone substance. There will be no addresses on these questions, and no communication on any other subject will be allowed. The secretary general of the meeting is Dr. J. L. Faure, 10 rue de Seine, Paris.

Annual Meeting of Italian Pediatrists.—The Ninth Congress of Italian Pediatrists was held at Rome, recently, and the deliberations are said to have marked great progress in the coordination of the teaching of pediatrics with the national movement for welfare work for children of all ages, and especially for infants. Professor Concetti, director of the *clinica pediatrica* at Rome, presided, and in his address told what has been done in these lines in other countries. Baduel described the fine results accomplished by the Italian Red Cross in infant welfare work, and the undersecretary of state for the department of public instruction emphasized the highly patriotic nature of any and all attempts for improving conditions for children—the future forces of the nation. Cacace emphasized the necessity for systematic study of the child from the standpoints of biology, psychology, hygiene, and the clinical, historical, sociologic and legal standpoints. Professor Tedeschi delivered the main address, on the necessity for transforming the teaching and the practice of pediatrics to make it conform to the actual needs of the child, free from tradition, prejudice and sentimentalism. He and Pacchioni outlined legislation to make it compulsory for all midwives and perhaps for all girls between 15 and 18 to take a course of training in the care of infants and children. Pachioni urged that pediatrics should be taught during two whole years of the medical course, and by professors with practical experience. He urged further the widespread education of the public in the care of young children, and efforts to combat professional wetnursing. Comba discussed the possibility of organizing forty-day courses in pediatrics for the town and country medical officials, the *medici condotti*.

An Italian View of the Proprietary Evil.—Prof. A. Murri is professor of clinical medicine at Bologna, and one of the leaders of the profession in Italy, now in his seventy-eighth year. In a letter published in the *Medico Italiano*, he protests against the way he is being importuned to prescribe only

made-in-Italy pharmaceuticals. He declares his unswerving patriotism, but insists that:

"Drugs should be classified as the 'useful and the useless,' not 'Italian or foreign.' Unlimited nationalism should be left to the nation which has invented maritime assassination. We Italians are the disciples of Mazzini, the allies of Wilson; we are battling above all for a moral purpose, to establish our own rights and the rights of others. Our patients have the right to expect from us the advice which will conduce most to their recovery, whether it benefits or not the manufacturing chemists of our country. Our most sacred duty is to do for them what will aid best to restore them to health. And here, thank God, we can serve at the same time the supreme behests of our conscience, and the prosperity of the manufacturing chemists and pharmacists of our country. But in order to do this we do not have to slander every foreign product and exalt every domestic product. What we must do is to sterilize the mephitic fungus growth of pseudochemistry which chokes the pharmacies and the advertising pages with preposterous pharmaceuticals. Those who put them out make money with them because no one protests that the health and the life of human beings are wares that cannot be exploited to enrich others. The humblest mixer of chemicals, who may not even know where the stomach is situated in man, may yet get some physician to testify to the wonderful virtues of some concoction in which arsenic, iodin and iron are compelled to blend, and on which some Greek or fancy name confers the powers to make it proclaimed a restorer of all the biologic forces.

"These self-styled benefactors of mankind speculate with absolute confidence on that pestiferous plague of the human soul, credulity.

"To aid the chemical-pharmaceutic industry in Italy, it is necessary to purge it, elevate it, winnow it. We must found a supreme council of chemists, pharmacists and clinicians, not only experts but incorruptible, who would examine the made-in-Italy pharmaceuticals with the severest scientific impartiality. This certainly would not uproot from the world that evil plant, credulity. There will always be, if not the ignorant, the stupid, which, like a baby, accept the secret, the mysterious, the miraculous. But good Italian physicians when they can be sure that in prescribing a product made in Italy they are serving the best interests of their patients, will never think of prescribing a foreign product. And I shall be the first to obey the dictates of competent persons who are devoted to the truth and not to the chase for gold or the mistaken conception of the duties which a physician owes to his country and to the health of the sick in his charge."

SOUTH AND CENTRAL AMERICA, MEXICO AND WEST INDIES

Death of Ayerza.—Dr. A. Ayerza, professor of clinical medicine at the University of Buenos Aires, author of numerous works on various medical topics, and vice president of the Consejo Nacional de Educacion, died July 14, aged 57.

Personal.—Dr. R. P. Vento has been advanced to the chair of physiology and medical physics, left vacant by the death of Prof. M. S. Toledo, at the University of Havana.——Dr. Carlos Chagas has been elected honorary professor of the University of Bahia, Brazil.

Da Rocha Retires from Army Medical Service.—The government of Brazil has accepted the resignation of General Ismail da Rocha of the medical corps of the army. His long years of service in the Corpo de Saude of the army, his collaboration on the medical press and in matters affecting the welfare of the profession in general, and his extensive private practice, it is considered, entitle him to withdraw from active service.

Subsidy for the Annals of the Uruguay Medical School.—The handsome journal issued by the medical faculty of the University of Montevideo, to contain the annals of the institution and other matters affecting the medical department and medical education, is now in its third volume. The legislature was recently appealed to for a larger subsidy for the undertaking, and it was voted to raise the appropriation for the purpose from $2,000 to $4,000.

Monument to Carrion.—The Fifth Latin-American Medical Congress, which was held at Lima in 1913, voted to erect a monument at Lima in honor of young Carrion who attempted to prove in his own person by scientific experiment the identity of Peruvian verruga and Oroya fever. The sum of 1,000 milreis was recently forwarded to the committee in charge of the matter, subscribed by physicians in Rio de Janeiro and S. Paulo. The treasurer of the fund is Prof. L. Avendano of the Faculdad de Medicina of Lima, Peru.

Medical Bibliography of Brazil.—The Academia Nacional de Medicina has appointed a committee to collect data to enable the publication of the complete medical bibliography of Brazil. The committee appointed in charge of the work consists of Drs. A. Nascimento, O. da Fonseca, J. Moreira and B. Valverde. They are now sending out questionnaires to all the medical men in Brazil asking for copies of all works or reprints and details as to the publication of all articles and works bearing in any way on the medical sciences. A resident physician in each district has also been appointed to collect data.

Rio to Have Institute of Radiology.—The medical faculty of the University of Rio de Janeiro has voted unanimously in favor of organizing a model Instituto de Radiologia, with the assistance of the government. The present roentgen institute is to be enlarged and form part of the new institution, and there is to be a department for radium therapy. The minister of foreign affairs has been solicited to obtain from the United States, through the Brazilian embassy, the quantity of radium necessary for the purpose. The committee in charge of the organization of the new institute comprises Professors Terra, Peixoto, A. Porto and E. Rabello, with Prof. A. de Castro as the spokesman.

A CORRECTION

Formaldehyd-Phenol in Camphor Paraffin.—In the issue of August 24, page 688, in the abstract of the article by Connell on "Formaldehyd-Phenol in Camphor Paraffin," the formula for Connell's antiseptic calls for a 0.5 per cent. addition of formaldehyd to the mixture to be obtained by adding 5 parts of a 10 per cent. solution of formaldehyd in alcohol to 9 parts of the mixture. This should have read 95 parts instead of 9 parts.

LONDON LETTER

LONDON, Aug. 7, 1918.

Another Hospital Ship Torpedoed

Another hospital ship has been torpedoed by the Germans. She had taken on board at a foreign port about 600 wounded, the majority seriously, a number of the Women's Army Auxiliary Corps, the usual complement of medical officers, and a crew of 115. The attack occurred some miles from land, the night was pitch dark and the sea was decidedly choppy. Few of those on board would have been saved had not the ship, though badly damaged, been able to remain afloat for two hours. The torpedo completely smashed one of the wards occupied by cot patients, many of whom must have been killed outright by the explosion. The ship's officers and crew were quickly at their posts, and the order "wounded first" was, of course, followed. Every one kept their heads and the medical staff is described as magnificent in bringing the men from the wards to the deck. Man after man had to be carried as he lay in his cot, and it was a very trying task to get them into the boats. Every one who could lend a hand went below to bring up the wounded. They were picked up by destroyers. The number missing and presumed drowned are 116, which includes two medical officers and one United States soldier.

The Annual Meeting of the British Medical Association

The eighty-sixth annual meeting of the British Medical Association has been held in London. As in the three preceding meetings during the war, scientific proceedings and social functions have been excluded and the meeting confined to the discussion of medical politics by the representative body. Sir Clifford Allbutt, who was elected president in 1914 for the annual meeting arranged to take place in 1915 at Cambridge and has been reelected ever since, was again reelected, constituting a record which is likely to remain unique. The finances of the association have been adversely affected by the war. After providing against depreciation and all visible liabilities, the balance to be carried forward to the surplus funds was $14,000. The receipts of the association are lower by $6,000 owing to the increase in the number of members serving abroad who pay a reduced subscription. The difficulties in publishing the *Journal* have been further increased. The price of paper has advanced until for a paper of inferior quality five times the prewar rate is being paid. The expenditure on paper in 1916 was $40,000; in 1917 it was $65,000, and the cost of printing was

also higher. A satisfactory feature was an increase of $7,000 in the revenue from advertisements. But it is reckoned that the diminished number of pages in the present issues will not be compensated for by the increased rate charged. The paper supply has been cut down by the government more drastically than was expected, and instead of as in prewar times about sixty or seventy pages of reading matter and as many of advertisements, there are now only about thirty-two of each. The question of raising a voluntary fund to assist the candidature of physicians for seats in Parliament was discussed. While the desirability of the medical profession's being more fully represented was admitted, the difficulties of any scheme were realized. Almost of necessity a member of Parliament must belong to one of the political parties in existence and owe allegiance to it and not to the profession. If he came forward as representing the medical profession he would be defeated. The proposals for a state-aided midwifery service were considered. A resolution was carried that it would be detrimental to the public interest that the practice of normal midwifery should be placed solely in the hands of midwives; also that, in any scheme for the improvement of the midwifery service, private physicians should be responsible for the clinical supervision of midwives. The desirability of a ministry of health was endorsed, and it was resolved to cooperate with the Royal Colleges and other public medical bodies in pressing the project on the government.

The Male Birth Rate and the War

In THE JOURNAL, June 1, 1918, p. 1619, I referred to the increase of male births in proportion to female that has taken place during the war. The figures are 1,049 males to 1,000 females during 1916 against 1,033 to 1,000 in the preceding five years, and the proportion is the highest recorded during the last half century. In the *Daily Mail*, a woman physician, Dr. Arabella Kenealy, discussing the problem how to raise the male birth rate, accepts the explanation that it is Nature's method of compensating for the male losses of life in the war, and she gives a very interesting explanation. She expounds the view that sex is determined by the relative vital power of the parents. When the vital power is greater in the father, daughters predominate; when in the mother, sons. As men make greater efforts as bread-winners she thinks that women's power is more conserved and thus she accounts for the normal preponderance of male births. The father being thus in a special sense the parent of the daughter and the mother of the son, each sex inherits preponderantly from the other. Parental power is not available for output but is locked up in the constitution—invested vital capital, not vital income available for expenditure. But just as to meet an increase of daily expenditure one may have to realize investments, so to meet increased bodily or mental activity one must draw on constitutional capital by converting vital investments into vital currency. Now the stress of war falls most heavily on men, and to meet the strain they draw on their vital reserves. Hence their parental power is diminished in comparison with women, and male births increase. Dr. Kenealy states that the strain—educational, athletic and industrial—put of late years on adolescent girls has raised the female birth rate by decreasing women's maternal power and thus relatively increasing men's paternal power. In the cultured classes particularly, she finds that strenuous games during the years of development have so weakened women's constitutional and maternal power as to cause a huge excess of girl births. By forbidding all strenuous activities, social or athletic, before and after marriage, Dr. Kenealy states that she has frequently succeeded in securing male offspring in patients whose stock had for generations produced girls exclusively.

PARIS LETTER

PARIS, July 25, 1918.

Treatment of Purulent Arthritis

At one of the recent meetings of the Société de Chirurgie de Paris, Dr. Willems of Ghent reported the good results which he had obtained by means of active mobilization as a means of draining an arthrotomized joint. In a case of arthrotomy of the knee, for example, every time the patient extends and flexes the knee, the two synovial surfaces come in contact and glide one over the other, thus forcing the pus out of the wound. If these movements are made often enough and for a sufficient length of time, the pus is expelled from the joint almost as rapidly as it forms, and retention need not be feared. Three conditions are necessary to achieve this result: Make the incision sufficiently long, passing above the subtricipital bursa and down to the line of articulation; keep the incision open all the time throughout its entire length; institute maximum movements as soon as possible, in fact, very early. When the joint begins to become dry, there is a tendency to locking of the joint; this tendency to stiffness may be prevented by making a progressive closure of the wound by secondary suture.

The perfect drainage of the articulation which is assured by the active mobilization presents the following advantages: The infection is limited to the synovia; the temperature is kept down, rarely passing 38 C. in the evening; the general condition of the patient remains excellent; the muscles do not atrophy; the motion of the joint is entirely conserved. Willems has treated twenty cases of purulent arthritis involving the large articulations—these cases being caused by war wounds: knee, 11; elbow, 4; tibio-tarsal articulation, 5. A complete cure was obtained in 13, that is to say, with conservation of motion and of the musculature; in two cases motion was not complete; four ankyloses; resection was required in only one case.

Primary or Secondary Suture of the Soft Parts in Fracture Cases

Now that primary and secondary suture of wounds limited to the soft tissues or of wounds of the joints is recognized as a classical intervention, it seems that the same procedure should be adopted in cases of fracture. In this connection it is of interest to refer to 115 cases of this type reported to the Société de chirurgie de Paris by Dr. Thévenot. Among these 115 cases there were 88 cases of primary suture and 27 cases of secondary suture. These sutures were done in cases of fracture of the femur, of the leg, arm and forearm. The result obtained shows conclusively that such suture is fully justified, as much so as it is in cases of wounds of the soft tissues. What is the proportion of wounded who should benefit from that procedure? In quiet periods, Thévenot has done immediate suture in 40 per cent. of the cases. During an attack, when the wounded are not recovered so soon and the special sanitary formations receive only the severe cases (the mild cases of fracture being immediately switched to the rear by all sanitary formations), the percentage of primary sutures diminishes considerably. During the rush of work incident to an attack it is better, in doubtful cases, to disinfect and drain the wound, because it releases the services at the front so that they can receive the newly wounded, evacuate rapidly the men in course of treatment to the formations situated farther in the rear, which will make the secondary suture.

Reform in Medical Teaching in Paris

The Council of the Medical Faculty of Paris has prepared a report on the results of an examination into ways and means as to how medical teaching can be carried on after the war, in order that the medical school can sustain competition with medical schools in other countries. Important reforms have already been instituted during the course of the war. Among these, it may be noted, that since November, 1917, several teaching clinics have been held in the afternoon. Before that time they had been held only mornings. This permits students and physicians to get well coordinated instruction in the hospitals at any hour of the day. It is possible now to acquire in two or three months the knowledge which formerly would have taken over a whole year. This afternoon clinical teaching will be developed after the war, and the faculty proposes to combine this teaching with much lecture work (*un vaste enseignement libre)* entrusted to the hospital physicians.

The faculty believes that it is also urgently necessary to establish an Institut de biologie médicale for purposes of experimental research, and to construct a model hospital conforming to modern needs in every particular. This work will cause a considerable expense, therefore the faculty has made an urgent appeal to the public authorities. In order to encourage private contributions, the Association des amis de la Faculté de médecine has been organized. The first and organization meeting will be held next November, and will be attended by all those who wish to donate, bequeath or pledge themselves for a certain sum to the progress of medicine and the expansion of the influence of France. On the other hand, the medical faculty has agreed to extend its relations with the neutral countries and the allies. It has under consideration the project of interchanging students and professors. For the next school opening, the faculty has arranged several conferences which will be held by savants from America, England and Spain.

Deaths

Arthur David Dryfoos, New York City; College of Physicians and Surgeons in the City of New York, 1899; aged 41; at one time a Fellow of the American Medical Association; a member of the Medical Society of the State of New York; formerly captain, M. R. C., U. S. Army; assistant neurologist to the Vanderbilt Clinic, and attending neurologist to the German Dispensary and the Lebanon Hospital; was found dead in his office, August 22.

Dayton Parker, Detroit; Detroit Medical College, 1876; aged 72; a veteran of the Civil War; one of the founders and vice president of the Michigan College of Medicine and Surgery, Detroit, and one of the founders of the Emergency Hospital, Detroit; police surgeon of Detroit from 1901-1906; once a member of the state board of charities; died at his home, August 19, from heart disease.

Frederick Henry Cleaves, Boston; George Washington University, Washington, D. C., 1887; aged 54; a Fellow of the American Medical Association, and a member of the Association of Military Surgeons of the United States; acting assistant surgeon, U. S. P. H. S., since 1901; died at his home at Brookline, Mass., August 18.

Charles J. Meade, St. Paul; McGill University, Montreal, 1892; aged 48; a Fellow of the American Medical Association; formerly professor of clinical medicine in Hamline University; visiting physician to the City and County Hospital and St. Joseph's Hospital, St. Paul; died at his home, August 22, from heart disease.

Lieut. Frank Butler Sanders, M. R. C., U. S. Army, Hagood, S. C.; Medical College of the State of South Carolina, Charleston, 1910; aged 30; a Fellow of the American Medical Association; on duty with the American Expeditionary Forces in France; was killed, July 24, by the accidental explosion of a shell.

John Joseph Keating, Brooklyn; Baltimore Medical College, 1898; aged 42; supervisor of milk inspection for the New York Department of Health; for several years a member of the staff of St. Catherine's Hospital, Brooklyn; died at Saranac Lake, N. Y., August 16, from tuberculosis.

Milton Henry Haskins, Denver; Northwestern University Medical School, Chicago, 1875; aged 67; formerly coroner and health officer of Kingman County, Kan., and local surgeon of the Missouri Pacific system; died at his home, August 15, from uremia due to prostatic hypertrophy.

Died in the Service
IN FRANCE
LIEUT. FRANK B. SANDERS, M. C., U. S. ARMY, 1888-1918

Louis H. A. Schneider, New York City; College of Physicians and Surgeons in the City of New York, 1890; aged 49; a Fellow of the American Medical Association; a member of the Alumni Association of Bellevue Hospital; died at his home, August 22, from cerebral hemorrhage.

Robert John McFall, Paris, Tenn.; Vanderbilt University, Nashville, Tenn., 1892; aged 51; a Fellow of the American Medical Association; while driving over a grade crossing in Paris in his automobile, August 14, was struck by a train and instantly killed.

Niels C. Evans, Mount Horeb, Wis.; University of Illinois, Chicago, 1884; aged 61; a Fellow of the American Medical Association; at one time a member of the general assembly from the western district of Dane County; died at his home, August 21.

Ogden Hoffman Reynolds, Frankfort, Ky.; Kentucky School of Medicine, Louisville, 1888; aged 61; a Fellow of the American Medical Association; died in the King's Daughters Hospital, Frankfort, August 21, from acute peritonitis.

William Henry Mason, Stockton, Calif.; Albany (N. Y.) Medical College, 1911; aged 33; radiologist at the Stockton State Hospital; died at his home in that institution, August 20.

Una Howe Hasskarl, Brenham, Texas; University of Texas, Galveston, 1912; aged 31; a member of the State Medical Association of Texas; was killed instantly, July 10, in an automobile accident, 8 miles north of Dallas, Texas.

George K. Ewing, Ewington, Ohio; College of Physicians and Surgeons, Baltimore, 1881; Medical College of Ohio, Cincinnati, 1890; aged 61; a Fellow of the American Medical Association; died at his home, August 17.

George D. Brinkman, Springfield, Ohio; Starling Medical College, Columbus, Ohio, 1886; aged 64; for many years jail physician; died in the Springfield City Hospital, August 19, from cerebral hemorrhage.

John Sidle Burnett, Akron, Ohio; Ohio Medical University, Columbus, 1897; aged 52; at one time a member of the Ohio State Medical Association; was instantly killed by a fall from a bicycle, August 26.

John Emmet Gable, West Palm Beach, Fla.; Hahnemann Medical College, Chicago, 1909; aged 51; while driving into West Palm Beach, August 11; died in his automobile from cerebral hemorrhage.

John P. Wickersham, Peru, Ind.; Chicago College of Medicine and Surgery, 1917; aged 37; died at the home of his mother in Seaman, Ohio, June 24, from tuberculosis of the intestines.

Jacob Outwater Polhemus, Nyack, N. Y.; College of Physicians and Surgeons in the City of New York, 1869; aged 54; died in the Nyack Hospital, July 20, from arteriosclerosis.

Frederick William Hill, Brooklyn; Eclectic Medical College of the City of New York, 1900; aged 44; died at his home, August 7, from abscess of the lung.

Anson Jerome Avery, Northville, N. Y.; Berkshire Medical College, Pittsfield, Mass., 1867; aged 74; died at his home, August 16, from cerebral hemorrhage.

Joshua George Wolfe, Ashland, Ky.; Hospital College of Medicine of Louisville, Ky., 1906; aged 51; died at his home, August 23, from heart disease.

Samuel S. Alexander, Christianburg, Ky.; University of Louisville, Ky., 1853; aged 85; died at his home, August 12, from cerebral hemorrhage.

Edward Henry Stevens, Athens, Pa.; New York University, New York City, 1888; aged 51; died at his home, August 12, from nephritis.

Clarence B. Putnam, Colusa, Calif.; Missouri Medical College, St. Louis, 1883; aged 57; died at his home in Marin County, August 4.

Robert Lee Kurth, Curreyville, Tex.; University of Texas, Galveston, 1916; aged 25; died, July 17, after an operation for appendicitis.

William Richardson Barker, Malden, Mass.; Dartmouth Medical School, Hanover, N. H., 1863; aged 95; died at his home, July 28.

Thomas A. Bair, Sabinsville, Pa.; Jefferson Medical College, 1879; aged 70; died at his home, June 14, from cerebral hemorrhage.

Rudolph Berendsohn, Brooklyn; Long Island College Hospital, 1881; aged 78; died at his home, August 16.

Marriages

LIEUT. DAVID ANDREW BIGGER, M. R. C., U. S. Army, Rock Hill, S. C., on duty at Camp Crane, Allentown, Pa., to Miss Hazel Mott of Watsonville, Calif., at Allentown, Pa., August 3.

LIEUT. JOHN ALEXANDER MCINTOSH, JR., M. C., U. S. Army, Memphis, Tenn., on duty at Camp Greenleaf, Ga., to Miss Ethel Brown, also of Memphis, August 19.

LIEUT. THEODORE LEROY STORY, M. R. C., U. S. Army, to Miss Theresa May Hiney, both of Hartford, Conn., June 29.

CAPT. VERNON ROBERTS, M. C., U. S. Army, National Home, Wis., to Mrs. Armin Mueller, in New York City, July 24.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE MEDICAL FRAUD ON THE PUBLIC AND ON THE PROFESSION

DR. A. W. CHASE'S NERVE PILLS

Contribution from the Chemical Laboratory of the American Medical Association
A. H. Clark, Ph.G., B.S.

The label on the box of "Dr. A. W. Chase's Nerve Pills" states that they are "prepared for the Dr. A. W. Chase Medicine Co., Props., Buffalo, N. Y.," and that they are "used in the treatment" of "thin and watery blood, nervous disorders, brain fag, nervous headache, nervous dyspepsia, irregular heart action, sleeplessness," etc. A circular within the box sets forth the alleged virtues of these pills and of other products of the company. This circular calls attention to the use of these pills in the treatment of almost everything from pale, sallow complexion, to paralysis and locomotor ataxia. Sexual debility and female troubles occupy a prominent place among the diseases and symptoms which are made "next to impossible of occurrence" through the use of these pills.

The circular declares that on every box of these pills will be found a portrait of Dr. A. W. Chase, of Chase's Family Recipe Book fame. The inference is that these pills are made according to a formula in this book. A careful search of Chase's Recipes, or Information for Everybody,[1] also a later edition[2] failed to reveal .. formula for any such pills as the ones purchased. On page 130 of the 1900 edition a formula is given for "Nervous Pills." These are essentially an alcoholic extract of Ignitia amara (St. Ignatius bean). These were said to be originated in 1854 by Rev. John W. Dagnal, the "Retired Physician," and much used by Professor Palmer of the University of Michigan. Dr. Repheto[3] calls attention to these in answer to an inquiry about Chase's pills. He states that this formula was much used by eclectics and because of poor results Dr. John King of Cincinnati introduced a substitute composed of extract of gentian, powdered savine leaves, powdered Ignatius leaves, and iron iodid.

The examination made in the chemical laboratory, discussed below, shows that "Dr. A. W. Chase's Nerve Pills" do not correspond in composition to pills prepared by either of the formulas mentioned above. They are coated, chocolate colored, and have a strongly persistent bitter aloes-like taste. The coating readily washed from the pills but the pill mass did not readily disintegrate. Even standing over night in water they were not entirely disintegrated.

"Here is the Nerve Food I know that will help you."
Malnutrition
Failure to get the good of the food you eat.
It is not what you eat, but what you eat, digest and absorb, that counts in keeping up the health and vigor of the human body. If you are not getting the benefit of the food you eat you should suspect the nervous system, for the nerves control the flow of the gastric juices of the stomach and the other chemical fluids of the digestive system which effect the digestion of starches, fats, etc.
Dr. Chase's Nerve Food
DR. CHASE'S NERVE FOOD

"Dr. A. W. Chase's Nerve Pills" used to be called "Dr. Chase's Nerve Food" before the Federal Food and Drugs Act made falsifying expensive. Then "Food" became "Tablets" and, later, "Pills." In Canada, however, it continued to be sold as a "Food." The illustration above is a reduced photographic reproduction of an advertisement in a Canadian magazine.

The pills weigh approximately 0.318 gm. (5 grains) with coating; the medicament alone weighs 0.210 gm. (3.5 grains). Microscopic examination did not show vegetable structure. Qualitative examination showed the absence of chlorids, bromids, iodids, phosphorus and phosphorus compounds. Abundance of sulphate was present, also carbonate. Iron and manganese were present in large quantities, calcium and sodium in lesser amounts, aluminum and magnesium in small amounts. The manganese was probably present as black oxid (manganese dioxid), since the manganese did not dissolve in water, and the pills with hydrochloric acid gave abundance of chlorin. Emodin bearing drugs were present and alkaloids also were present in small amounts. Iron, manganese, and sulphate were determined quantitatively. The iron oxid weighed indicated the presence of iron equivalent to 0.0395 gm. (⅗ grain) anhydrous ferrous sulphate in each pill. The amount of manganese pyrophosphate obtained indicated manganese equivalent to 0.021 gm. (⅓ grain), manganese dioxid in each pill. The quantity of alkaloid present was so small that it could not be determined accurately.

The chemical examination indicates that these pills contain iron, possibly in the form of ferrous sulphate which is in a state of more or less decomposition due to exposure and contact with the other constituents of the pills, manganese dioxid, aloes or aloin, vegetable extractive, and traces only of some alkaloidal drug.

TWO MISBRANDED NOSTRUMS

Brazilian Balm.—B. F. Jackson & Co., Arcade, N. Y., were alleged to have shipped into Massachusetts a number of packages of "Brazilian Balm." The claims made for this stuff, either direct or inferential, were to the effect that it would cure consumption, prevent lockjaw and would "clear out of the system" the germs of typhoid and diphtheria. These and many other claims were designated by the federal authorities as false and fraudulent. As no one claimed the property, the court condemned it and ordered that it should be destroyed.—[*Notice of Judgment No. 4764.*]

Wright's Indian Vegetable Pills.—The government filed a libel for seizure and condemnation of 1,080 packages of "Wright's Indian Vegetable Pills" charging that the claims made for them were false, fraudulent and misleading. The claims were to the effect that the pills would cure yellow fever, smallpox, erysipelas, consumption, cancer, venereal disease, paralysis, epilepsy and other conditions too numerous to mention. The government, on the other hand, charged that "in truth and in fact it was not of a medical nature such as would produce any such results and was entirely worthless for that purpose." The Wright's Indian Vegetable Pill Co., New York, admitted the allegations of the libel and the court permitted the product to be delivered to the company on payment of the costs of the proceedings and the execution of a bond in the sum of $250.—[*Notice of Judgment No. 4594.*]

Keeping Well in China.—Beware of Chinese cooking. It is frequently very rich and its tastiness often leads to overindulgence and indigestion.—American Chamber of Commerce of China.

1. By A. W. Chase, M.D., Published by R. A. Beal, Ann Arbor, Mich., 1900.
2. Dr. Chase's Combination Receipt Book, F. B. Dickerson Co., Detroit, 1915.
3. Medical World, Aug. 1912, p. 336.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

PHYSICIANS AND THE SELECTIVE SERVICE LAW

To the Editor:—For the last six months I have been about to make application for appointment in the Medical Reserve Corps, but had to defer it until now. I have a good opportunity to take about four weeks of postgraduate work at this time which I wish to do before making such application. However, under the new draft law I shall be a registrant on September 12. 1. I desire to know, in this connection, what effect, if any, will the fact of my registration have on my privilege of joining the Medical Reserve Corps later. 2. Would there be any advantage in my applying now, and taking the postgraduate work referred to afterward, or in proceeding as I have planned, that is, to take the postgraduate work first. B. F. W., Iowa.

ANSWER.—1. Application for a commission in the Medical Reserve Corps may be made before or after registration, or even after induction into camp.

2. Apply now. It is probable that if you ask to be sent to the Medical Officers' Training Camp at Fort Oglethorpe your request would be granted and you would then receive postgraduate military medical work, which will be of great service to you.

To the Editor:—1. I would like information as to how the medical men are classified in the selective draft regulations. 2. In what class would a man with three dependents be placed? W. L. N., Minnesota.

ANSWER.—1. Medical men will be classified by the local and district appeal boards as are other registrants under the selective service regulations. No doubt special regulations for physicians will be promulgated by the Provost Marshal-General.

2. The local boards will no doubt consider the dependency of the physician in accordance with regulations to be issued by the Provost Marshal-General. See Current Comment, "The Selective Service Law and Physicians," this issue.

To the Editor:—1. I am 41 years old, graduated from the Atlanta Medical College, have a wife and two girl children—ages 17 and 9. I have not any money, property or source of income save my professional work. Is it my duty to join the Medical Reserve Corps, or to remain at home and make a living for my family? 2. Will the same rule concerning dependents apply to physicians as to other drafted men? C. A. J., Georgia.

ANSWER.—1. Unless you receive a commission before September 12, you must register. It will then be the duty of the selective service boards to determine your disposition under the selective service law, under the regulations to be issued by the Provost Marshal-General.

2. See answer to W. L. N., above.

To the Editor:—1. I am the only physician in this town, as the other two have gone. My age is 33 years. I have a large stone quarry where I do the surgical and accident work. What would you advise me to do? My patients are asking me not to join, but I want to do what is right. 2. When a man is drafted, will he have to work on a private's pay for six months? U. S. C., Illinois.

ANSWER.—1. Not knowing all the circumstances, we cannot advise. The selective service boards are empowered, under the law, to exempt those engaged in necessary occupations or employments, and will no doubt take the factors mentioned into consideration in determining your status.

2. A physician who is drafted is given an opportunity to apply for a commission, and if physically, morally and professionally qualified, a commission is issued to him.

VOLUNTEER MEDICAL SERVICE CORPS

To the Editor:—1. I write this letter for an explanation of a blank which I received from Washington to fill in on behalf of the Council of National Defense. It is a Volunteer Medical Service Corps application blank to be filled out by every doctor in the United States. Now, I am 59 years old, and unable to be of any service. If I volunteer, will I have to go at my age? 2. If I do not fill out the blank, what will be the consequences? D. P. L., Ohio.

ANSWER.—1. No.

2. If you do not fill out the application blank, you will not receive the button indicating that you are a member of the organization. That is all.

To the Editor:—Today I received an application blank for membership in the Volunteer Medical Service Corps from the Council of National Defense. I do not understand this thing and write for information. From this name "Volunteer" I would infer it was not compulsory, yet some of my physician friends seem to think it is and nearly all have signed it up and returned it. Is it compulsory and what is the penalty if one does not send it in? I have noticed no particulars in THE JOURNAL of the American Medical Association about it, and of course I am in the dark as to what to do.
M. S. F., Kansas.

ANSWER.—Membership in this society is not compulsory. See answer to W. E., below.

To the Editor:—There seems to be a considerable variation of opinion in regard to the Volunteer Medical Service Corps. Martin and his element seem to be pushing things with a pretty high hand, with their committees, sub-committees, little buttons, regulations—everybody to register or sign up. We are at a loss to know what is right.
W. E., Michigan.

ANSWER.—The formation of a new and special organization for the purpose of enlisting physicians in war service has from the beginning seemed to THE JOURNAL unnecessary and unwise. The needs of the Army and Navy have been met promptly so far by voluntary enlistments, and there has been no indication that the needs of the future would not have been satisfied in the same way, even under the volunteer system. However, the passing of the new selective service law now renders such an indefinite and indeterminate society as the Volunteer Medical Service Corps superfluous and uncalled for. The vigorous promotion of this organization is creating a regrettable confusion and anxiety among physicians that should be avoided in these trying times. This is no time to fritter away energy in the construction and maintenance of intricate machinery of questionable value to do work which is being done and will be accomplished satisfactorily through regularly established channels.

Every man, including physicians, under 46 years of age, must register on September 12. The selective service boards are the only bodies empowered to dispose of those registered under the law. This will be done under the regulations promulgated by the Provost Marshal-General. Undoubtedly special regulations for the guidance of those boards will be worked out by the Provost Marshal-General conferring with the Surgeon-Generals. So far as those above 46 years of age are concerned: They will have in the future, the same privilege of volunteering as they have had in the past. The operation of the new selective service law will, without doubt, take into account the needs of the civilian population while providing for the medical requirements of the government.

LITERATURE ON THE LIFE OF AMBROISE PARÉ

To the Editor:—Please inform me where I may obtain books on the life of Ambroise Paré. I have read of him and his works, but have never been able to obtain a book on his life.
A. I. LAWBAUGH, M.D., Larium, Mich.

ANSWER.—We may refer you to the following books:

Paglet, S.: Ambroise Paré and His Times, New York, G. P. Putnam's Sons.
Andrews, J. G.: Ambroise Paré and His Times, *Med. Press and Circular*, 1900, p. 107.
Cumston, C. G.: A Brief résumé of the Life and Work of Ambroise Paré, *Boston Med. and Surg. Jour.*, 1901, **145**, 395.
Buck, A. H.: Growth of Medicine, Yale University Press. One chapter is devoted to Paré.

LITERATURE ON DIETETICS

To the Editor:—Kindly advise me as to the latest books on dietetics, especially as applied to sanatoriums.
E. C. DAVIS, M.D., Puposky, Minn.

ANSWER.—See "Literature on Diet and Nutrition," Queries and Minor Notes, THE JOURNAL, Sept. 8, 1917, p. 843.

NO LICENSURE WITHOUT PASSING A STATE BOARD EXAMINATION

To the Editor: Will a physician who has entered the Army in the Medical Reserve Corps be given a license to practice medicine or surgery in the United States without having passed the state board examinations? Please omit my name. J. C.

ANSWER.—No.

Observation.—Men become more keen and appreciative in proportion to the individual opportunities they receive, and the more they are encouraged to observe for themselves the greater becomes the value of their effort.—F. M. Caird.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

ARIZONA: Phoenix, Oct. 1. Sec., Dr. Allen H. Williams, 219 Goodrich Bldg., Phoenix.
CALIFORNIA: Sacramento, Oct. 21-24. Sec., Dr. C. B. Pinkham, Butler Bldg., San Francisco.
COLORADO: Denver, Oct. 1. Sec., Dr. David A. Strickler, 612 Empire Bldg., Denver.
DISTRICT OF COLUMBIA: Washington, Oct. 8. Sec., Dr. Edgar P. Copeland, The Rockingham, Washington.
GEORGIA: Atlanta, Oct. 8-9. Sec., Dr. C. T. Nolan, Marietta.
HAWAII: Honolulu, Sept. 9-13. Pres. R. W. Benz, 1141 Alakea St., Honolulu.
IDAHO: Boise, Oct. 1-2. Sec., Dr. Ray H. Fisher, Rigby.
ILLINOIS: Chicago, Sept. 24-27. Mr. F. C. Dodds, Supt. of Registration, Springfield.
IOWA: Des Moines, Sept. 10-12. Sec., Dr. G. H. Sumner, Capitol Bldg., Des Moines.
KANSAS: Topeka, Oct. 8-9. Sec., Dr. H. A. Dykes, Lebanon.
MASSACHUSETTS: Boston, Sept. 10-12. Sec., Dr. W. P. Bowers, Room 501-1 Beacon St., Boston.
MICHIGAN: Lansing, Oct. 8-10. Sec., Dr. B. D. Harison, 504 Washington Arcade, Detroit.
MINNESOTA: Minneapolis, Oct. 1-4. Sec., Dr. T. McDavitt, 741 Lowry Bldg., St. Paul.
MISSOURI: Kansas City, Sept. 30-Oct. 2. Sec., Dr. George H. Jones, State House, Jefferson City.
MONTANA: Helena, Oct. 1. Sec., Dr. S. A. Cooney, Power Bldg., Helena.
NEW JERSEY: Trenton, Oct. 15. Sec., Dr. Alex. MacAlester, 438 E. State St., Trenton.
NEW MEXICO: Sante Fe, Oct. 14. Sec., W. E. Kaser, East Las Vegas.
NEW YORK: Albany, Buffalo, New York and Syracuse, Sept. 24-27. Mr. H. J. Hamilton, New York Dept. of Education, Albany.
OKLAHOMA: Oklahoma City, Oct. 8-9. Sec., Dr. J. J. Williams, Weatherford.
RHODE ISLAND: Providence, Oct. 3. Sec., Dr. B. U. Richards, 315 State House, Providence.
UTAH: Salt Lake City, Oct. 7-8. Sec., Dr. G. F. Harding, 405 Templeton Bldg., Salt Lake City.

Florida June Examination

Dr. W. M. Rowlett, secretary of the Florida Board of Medical Examiners, reports the written examination held at Jacksonville, June 17-18, 1918. The examination covered 7 subjects and included 70 questions. An average of 75 per cent. was required to pass. Of the 15 candidates examined, 10 passed and 5 failed. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Columbian University		(1902)	86.3
State University of Iowa College of Medicine		(1901)	92.3
Tulane University		(1918)	93
Baltimore Medical College		(1905)	75
Johns Hopkins University		(1918)	90.9
Maryland Medical College		(1901)	79.7
University of Maryland		(1902)	89.5
Medical College of Ohio		(1880)	75
Chattanooga Medical College		(1908)	76
University College of Medicine		(1903)	90.5
	FAILED		
University of Arkansas		(1907)	55.6
University of Georgia		(1912)	66
Long Island College Hospital		(1887)	62.7
Meharry Medical College		(1914)	71.4
University of Nashville		(1894)	56

Iowa June Examination

Dr. G. H. Sumner, secretary of the Iowa State Board of Medical Examiners, reports the written examination held at Iowa City, June 6-8, 1918. The examination covered 8 subjects and included 100 questions. An average of 75 per cent. was required to pass. Thirty-three candidates were examined, all of whom passed. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Rush Medical College		(1917)	88
State University of Iowa College of Medicine (1918) 82.9, 83, 86.1, 86.9, 88.1, 89, 89.1, 89.2, 90.1, 90.5, 90.7, 90.9, 91, 91.1, 91.2, 91.5, 91.6, 91.9, 91.9, 92.5, 92.5, 92.6, 92.7, 93.1, 93.1, 93.6, 93.9.			
State University of Iowa College of Homeopathic Medicine (1918) 81, 86.4, 88.9.			
Washington University		(1918)	90
University of Pennsylvania		(1918)	92.7

Michigan May-June Examination

Dr. B. D. Harison, secretary of the Michigan State Board of Registration in Medicine, reports the written examination held at Detroit, May 30-June 1, 1918. The examination covered 14 subjects and included 100 questions. An average of 75 per cent. was required to pass. Of the 22 candidates examined, 19 passed and 3 failed. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Tufts College Medical School		(1918)	87.7
Detroit College of Medicine and Surgery (1918) 78.6, 79.2, 79.4, 79.8, 80.2, 80.5, 82.2, 82.5, 82.6, 82.9, 83.1, 83.6, 84.2, 85.1, 85.4, 86.5, 86.5.			
Western University		(1916)	80.4
	FAILED		
Detroit College of Medicine and Surgery		(1918)	

* Three candidates were conditioned in one subject.

Missouri June Examination

Dr. George H. Jones, secretary of the Missouri State Board of Health, reports the written examination held at St. Louis, June 17-19, 1918. The examination covered 14 subjects and included 100 questions. An average of 75 per cent. was required to pass. Of the 95 candidates examined, 79 passed and 16 failed. Nine candidates were licensed through reciprocity. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Howard University		(1917)	81.1
Loyola University		(1917)	79.1
Northwestern University		(1918)	89.3
University of Kansas		(1918)	81.2
Maryland Medical College		(1912)	75.1
American Medical College		(1895)	82.5
Barnes Medical College		(1906)	77.2
National University of Arts and Sciences		(1916)	76.4
St. Louis College of Phys. and Surg. (1918) 75.1, 75.8, 76.1, 79.5, 80.2, 81.7, 82.1, 84.2.		(1917)	75.1
St. Louis University (1918) 77.8, 78.1, 79.1, 79.1, 79.8, 80.1, 80.4, 81.1, 81.1, 81.4, 81.9, 81.9, 82, 82.1, 82.2, 82.2, 82.4, 82.5, 82.6, 82.7, 82.8, 83, 83.1, 83.1, 83.1, 83.1, 83.3, 83.3, 83.5, 83.6, 84.3, 84.4, 84.8, 85.1, 85.4, 85.5, 86.1, 86.1, 86.1, 86.1, 86.3, 86.7, 86.8, 86.8, 87.1, 87.9, 88.2, 89.3.			
Washington University (1900) 88.6; (1918) 80.3, 81.1, 81.6, 81.8, 82, 82, 84.1, 85.1, 85.5, 86.8, 87.1.			
*Meharry Medical College		(1918)	77.8, 82.1
	FAILED		
St. Louis College of Phys. and Surg. (1918) 53.6, 60.2, 61.1, 66, 69.1, 71.1, 72.3, 73.1, 73.5.		(1917)	56.6
Meharry Medical College (1916) 60.7, 67.1, 70.1; (1917) 58.9, 60.9, 61.4			

College	LICENSED THROUGH RECIPROCITY	Year Grad.	Reciprocity with
Chicago College of Med. and Surg.		(1916)	Illinois
Loyola University		(1916)	Illinois
Kansas Medical College		(1905)	Kansas
Louisville National Medical College		(1906)	Kansas
Cornell University		(1910)	Illinois
Meharry Medical College	(1913) (1914)	(1917)	Tennessee
McGill University		(1897)	Kansas

New Hampshire June Examination

Dr. W. T. Crosby, secretary of the New Hampshire State Medical Board, reports the written examination held at Concord, June 24-26, 1918. The examination covered 12 subjects and included 60 questions. An average of 75 per cent. was required to pass. Of the 5 candidates who took the physician's and surgeon's examination, 3, including 1 osteopath, passed and 2, including 1 osteopath, failed. One candidate was licensed through reciprocity. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Boston University		(1918)	79
Harvard University		(1918)	90
	FAILED		
McGill University		(1918)	70

College	LICENSED THROUGH RECIPROCITY	Year Grad.	Reciprocity with
Tufts College Medical School		(1906)	Mass.

Vermont June Examination

Dr. W. Scott Nay, secretary of the Vermont State Board of Medical Registration, reports the oral, practical and written examination held at Burlington, June 10-12, 1918. The examination covered 12 subjects and included 120 questions. An average of 75 per cent. was required to pass. Eighteen candidates were examined, all of whom passed. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Jefferson Medical College		(1918)	91.3
University of Vermont (1918) 80.1, 81.3, 84.1, 85.1, 85.4, 86.1, 87.2, 87.4, 88.3, 88.8, 89.1, 89.9, 90.2, 90.6, 90.9, 91.2.			
McGill University		(1911)	88.2

Book Notices

THE ACTION OF DRUGS. A Course of Elementary Lectures for Students of Pharmacy. By Torald Sollmann, M.D., Professor of Pharmacology and Materia Medica in the School of Medicine of Western Reserve University, Cleveland. Cloth. Price, $1.50. Pp. 213. Philadelphia: W. B. Saunders Company, 1917.

This book consists of a course of lectures given to senior pharmacy students. It is not intended to be a complete study of the subject, but merely to give the young pharmacist a concise survey of the modern conceptions and knowledge of drug action. The author naturally is under considerable difficulties in making the work concise and elementary, yet at the same time sufficiently complete and technical to be of value. Probably future revisions will add many things and omit others. Many statements are very didactic, and must be taken by the student with a realization of the fact that their author gives them an authoritative character. For example: "Calcium sulphide is sometimes used internally against boils. This has no rational foundation." "Calomel in large doses is often an efficient diuretic." "The action of digitalis enables the heart to compensate more or less perfectly for any valvular defects." Such statements are not adequate without explanation. Dr. Sollmann's book is perhaps the first book for pharmacists which concerns the actions of drugs. It is questionable whether any clear knowledge of the actions of drugs can be given to pharmaceutic students who have not the necessary basis of studies in anatomy, physiology and pathology.

TYPHOID FEVER CONSIDERED AS A PROBLEM OF SCIENTIFIC MEDICINE. By Frederick P. Gay, Professor of Pathology in the University of California. Cloth. Price, $2.50 net. Pp. 286. New York: The Macmillan Company, 1918.

In this book the author undertakes to deal with typhoid fever as a problem of scientific medicine rather than to handle it as a question solely of the clinic or of the laboratory. The point of view is broad and the treatment, on the whole, well balanced. The treatise illustrates one of the newer tendencies in American medicine, and, it is to be hoped, will prove a forerunner of other books on special topics which shall not only give critical surveys of the enormous mass of accumulated research, much of which may otherwise remain unassimilated and valueless, but shall also stimulate investigation by pointing out unsettled questions. Such books are sure to serve the cause of medical advancement.

As might be anticipated from the author's own work, the chapters on immunization, the practical aspects of vaccination, and vaccine and serum treatment are particularly full and discriminating. The chapter on the carrier condition and the section dealing with laboratory diagnosis of typhoid are also informed throughout by the author's own personal experience. Public health workers may wish to take exception to a few statements in the earlier part of the book, such as that on page 10 in which the author declares it will "be evident that all significant information concerning the nature of the disease itself and its method of dissemination, as well as all effective means that have been devised to prevent and cure it . . . have depended on laboratory data and are based on the recognition of the single bacterial causative factor." This statement appears to overlook the fact that much of the epidemiologic work on the relation of typhoid to sewage-contaminated drinking water has been carried out, and in the nature of the case must be carried out without ever finding or attempting to find the typhoid bacillus. The evidence that causes an investigator to attribute a typhoid epidemic to a particular milk supply does not, as a rule, depend on laboratory data. The author's comparison of European city typhoid rates with those obtaining in the United States is, of course, worth making (pages 17-19), but it is unfortunate that the figures are brought down only to the year 1913, and that the great improvement observed in this country in 1914, 1915 and 1916 is apparently overlooked. The figures for these years are easily accessible, and since the book bears the publisher's date of 1918, might presumably have been included. The typhoid rates for 1914-1917 stand very favorably in comparison with the European figures, and make the author's remarks on our "backwardness" seem a little antiquated at the present time. On page 7 the author appears to accept by implication the curious theory of Pettenkofer (not Pettenkoffer) that typhoid bacilli pass through a "ripening stage" in the soil! He also seems to endorse the hardly substantiated view that "epidemics caused by contaminated milk, when compared with those produced by contaminated water, are characterized by suddenness and violence of onset" (p. 65).

There are relatively few typographical errors. We have noted Baerthelin (for Baerthlein), page 35, and "paratyphsus" in the note on page 153. The author's style is in general clear and straightforward. There are few sentences like the one on page 50, beginning: "The possibility of other insects serving as transmitters of typhoid is rendered possible . . .". The book has a good bibliography, but unfortunately no index.

THE HUMAN MECHANISM Its Physiology and Hygiene and the Sanitation of Its Surroundings. By Theodore Hough, Professor of Physiology, University of Virginia, and William T. Sedgwick, Professor of Biology and Public Health, Massachusetts Institute of Technology. Revised edition. Cloth. Price, $2. Pp. 572 with 167 illustrations. Boston: Ginn & Co., 1918.

This edition of a well known book can be heartily recommended as a textbook for college students, nurses, or any layman desiring to inform himself in a general way concerning the structure and function of the various elements of the human body and its hygiene. The teacher can easily amplify the subject covered by the text and correct such minor mistakes as appear here and there. The book is simple in outline, lucid in presentation, and accurate in fact. Relieved from the responsibility of treating any one subject in much detail, the authors have succeeded in presenting to the general reader and student the workings of the human mechanism as a whole and its care. It contains all the general information which many educated persons need but do not have. Though not primarily intended for the home, the book ought to be in the library of every family at all concerned about the health and care of its members. The text is some twenty pages longer than in the previous edition. Some new illustrations have been added. The two parts of the book are also issued separately as "Elements of Physiology," and "Hygiene and Sanitation."

SYPHILIS AND PUBLIC HEALTH. By Edward B. Vedder, A.M., M.D., Lieut.-Col., Medical Corps, U. S. Army. Published by Permission of the Surgeon-General, U. S. Army. Cloth. Price, $2.25. Pp. 315. Philadelphia: Lea and Febiger, 1918.

The increased interest in the prevention of venereal diseases as a war measure has produced numerous books on the subject. Colonel Vedder's book differs from most of those available in that it is addressed primarily to the medical profession and is based on practical knowledge of Army procedures. In an appendix the author includes the technic of the Wassermann reaction and the Australian law, on which so many of our present laws for the control of venereal diseases are being modeled.

AMPUTATION STUMPS: THEIR CARE AND AFTER TREATMENT. By G. Martin Huggins, F.R.C.S., Medical Officer to the Government Schools, Salisbury, Rhodesia. Cloth. Price, $2.75. Pp. 228, with 95 illustrations. New York: Oxford University Press, 1918.

The author states that he was responsible for the treatment of some 3,000 amputation cases during the past year. He describes the original operation, and discusses corrective measures and the fitting of adequate artificial limbs. The book covers the subject fully, and presents illustrations from actual cases. As a record of a large personal experience the book deserves consideration in the forming of any conclusions as to the disposition of military casualties in which amputation has been performed.

Milk as a Food.—A quart of milk is equivalent in fuel value to a pound of lean meat, or eight eggs. It is, therefore, a very much cheaper source of fuel than either one of these foods. —*Good Health.*

Social Medicine, Medical Economics and Miscellany

Experiences with Rehabilitation of the War Maimed in Germany

The *Hospitalstidende* gives a report on a special meeting in connection with the exhibition of artificial limbs and other prostheses at Berlin recently. Beckmann had been investigating factories, mines, etc., to ascertain to what extent the war maimed were being utilized as workers. Comparatively few of the severely disabled were found in the ranks of workers, very few, that is, of those with disability estimated at 50 per cent. It was estimated that the work they would be able to do would be the equivalent of about one-third of what a normal workman would produce, but experience has shown that their output averages two-thirds. Still more favorable are the conditions in certain forms of work for which the war maimed readily adapt themselves, as for instance the fireworks factory at Spandau, where they turned out the equivalent of 94 per cent.

On the basis of his investigations, he urged rehabilitation centers in every large province, so that the training could begin while the man is still taking treatment, and a place in some workshop could be found for him. The branches of work must be selected which call least on the injured limb, but the selection should be preceded by a period of work among his comrades in order to determine the special capacity in each case. Dr. Rodike stated that the war maimed agricultural workers who own a farm or whose parents own one, regularly return to agricultural life. But about 50 per cent. of the farm hands have taken up other vocations, and it is somewhat difficult to find other positions for them. Hartmann commented on the difficulties in training men in handicrafts, as this requires more all-around training than is customary in industries where work is distributed and only one small part falls to one workman.

Another disadvantage of teaching a handicraft is that the men have to bring their materials to the workroom, and sometimes this is quite a load. Besides this, the teacher is seldom able to devote much time to any one of the men at a time, so that the disabled men have to work alone too much. Men who have lost a leg are much better off than after amputation of the upper arm. On the whole, he said, the hope of training the disabled men in handicrafts has had to be largely abandoned. In mining, the war maimed can scarcely be used, and the mining officials are against employing them. Dr. Wullstein protested against the assumption that the man must always return to his former trade or one closely allied to it. Unskilled workmen can be trained to be skilled, and they can select their own trade thereafter. For example, a man amputated at the shoulder can be trained to be a clerk in a store, a telephone operator, a meter inspector. The state and the community should look out for these war maimed. It is particularly advantageous to have the one-armed men trained by a one-armed man in the rehabilitation centers. Schlesinger remarked that it depended mainly on the man's physical capacity and his intelligence.

The speakers that followed denounced Dr. Wullstein's suggestion, declaring that nothing must be allowed to interfere with the general principle of restoring the man to his former trade or to one closely allied. The well paid industrial worker, for instance, should not like it at all to be placed in some poorly paid subordinate municipal or state position. In Austria the plan has been adopted to appoint the postmen from the list of one-armed war maimed. H. Scheuermann, who reports the meeting for the *Hospitalstidende*, remarks that the consensus of opinion seems to be that the war maimed as a rule cannot count on remunerative positions, but in certain branches of industry, and in running certain machines, adapted to the use of the maimed, they may do as well almost as the normal worker.

Medicolegal

Why New Trial was Denied in Malpractice Case

(Campbell v. Peters (Me.), 102 Atl. R. 881).

The Supreme Judicial Court of Maine, in overruling a motion made in behalf of the defendant for a new trial, after the plaintiff had obtained a verdict for some sum not stated by the court, says briefly that this was an action brought by the plaintiff against the defendant for alleged malpractice in the performance of a surgical operation. The case came up on motion for a new trial on both the ground of liability and the damages awarded. On the question of liability arose the usual conflict of testimony between medical men when called to testify on the one side and the other of a medical or surgical case. The jury found for the plaintiff on this issue, and its verdict, if accorded the benefit of the well-established rules of law, should not be disturbed. Nor does the court think, under the testimony, that it would be warranted in cutting down the amount of the verdict. The jury is as much a part of the judicial system, under the constitution and laws, as the presiding justice or the law court. While this court might have a different judgment from the jury in a case, it is not authorized to substitute its judgment for the jury's, when the jury has exercised a judgment not so inconsistent with the most favorable interpretation the evidence will bear as to indicate bias, prejudice or improper influence.

Federal Court Follows State on Hospital Liability

(Paterlini et ux. v. Memorial Hospital Association of Monongahela City, Pa., et al. (U. S.), 247 Fed. R. 639)

The United States Circuit Court of Appeals, Third Circuit, which affirms a judgment for the defendants, says that this action was brought against an incorporated hospital and its directors individually, by the parents of a boy who died while a patient in the hospital, to recover damages for negligence alleged to have caused his death. The jurisdiction of the court was based on diversity of citizenship, the plaintiffs being citizens of Italy, and the defendants citizens of Pennsylvania. The proofs showed that a ward student nurse had occasion to administer a cathartic of Epsom salt to the boy. Finding no salts in the customary place, she, in violation of the rules, went across two corridors to the dressing room, which connected with the surgical room, where were two 1-gallon bottles, one labeled, "Bichloride, Poison," and the other, "Solution of Salts." She put her tray on a table, and when she went to get her glass reached at the same time for the bottle and picked up the wrong one. The proofs showed further that the executive work of the hospital was in charge of experienced and capable people, and there was an entire absence of any proof showing an act of commission or omission on the part of the directors, or on the part of any executive officer of the hospital. In the absence of such proof, it is clear that the court was justified, and indeed it was its duty, to charge the jury that there was no proof that justified a verdict against the directors personally or against the hospital for negligence on the part of its executive officers.

Nor does the court think that the hospital should be held liable for the negligence of the student nurse. The corporation being created by the state of Pennsylvania, being supported by charitable contributions of its citizens and by appropriations by that state, and the charitable uses and trusts which such a corporation administers being subjects over which the courts of that state are given statutory jurisdiction, the case would seem especially one in which a federal court would from comity, if for no other reason, incline to follow the settled law of Pennsylvania if such a law was found to exist; and the settled law of Pennsylvania is such that a plaintiff in a case like this would have no ground on which to support a case in a court of that state. Why should the fact that he is a nonresident of that state, and therefore with less claim on its public charities than its own citizens, enable him, by going into a federal court, to obtain a judgment which would be denied to a citizen of Pennsylvania? The jurisdiction of the federal court given to non-

residents against citizens of the local state is to insure an impartial trial, not to create rights of action which citizens of the state, in like condition, do not have. It was urged that this court should not follow the Pennsylvania cases, because, as was alleged, they were not based on sound principles. But the simple fact is that if liability by a hospital, to a patient, for the negligence of a nurse exists, it is one imposed by law and is not created by contract. The Pennsylvania courts charged with the responsibility of imposing or not imposing liability, and having the wide field of encouraging, as well as of beneficially administering, charitable trusts, held that they would not impose liability on the part of the trust to a beneficiary for the negligent act of an employee or agent in administering its benefits. Whatever the reasoning process by which it is reached, the conclusion commends itself to this court. This court sees no reason why it should depart from, and every reason why it should abide by, the ruling of the Pennsylvania courts.

Duty of Railroad Companies When Employees Are Injured

(*Troutman's Administratrix v. Louisville & N. R. Co.* (*Ky.*), *200 S. W. R. 488*)

The Court of Appeals of Kentucky says that it was a new question for that state which was presented by this case as to the legal duty of a railroad company to furnish medical aid and suitable attention to its employees who are injured in the course of their employment. The court holds that, when an employee of a railroad company is injured while attempting to perform some service within the scope of his employment, whether his injuries are due to his own want of care or to the negligence of the railroad company, the company through its superior servants immediately in charge at the place where the accident occurs, such as the conductor in this instance, is under a duty to take such action as may be reasonably necessary and sufficient under all the surrounding circumstances to furnish the injured employee medical aid and attention suitable to the injury received, if there are no members of his family present who are capable of performing and do undertake to perform this service; and this duty exists although there may be no contract obligation requiring it or statute making it mandatory. The court does not, however, undertake to lay down any rule as to the length of time this care and attention must continue. It deems it sufficient here to say that the duty to observe it springs out of an emergency, and a variety of circumstances may control its duration. What a railroad company must do in the exercise of reasonable care to furnish medical aid and assistance to an injured employee must necessarily depend on the time, place, character of the injury and surrounding circumstances; but whatever the time, place or circumstances, the legal duty is there, and unless the company performs this duty, it may be required to respond in damages for its failure.

If, however, adult members of the family of the injured man are present when the accident occurs, or come to him before his removal by the company, or at any time thereafter, and express a desire to take charge of the injured employee, the servants of the railroad company present at the time should deliver over to them the care of the case and do what they advise. The wishes of the injured man, if he is capable of understanding the conditions, should also, of course, be respected, and such convenient and practicable arrangements made as he desires; in other words, the injured man and his family have the right to determine what course shall be pursued.

In this case, in which a judgment in favor of the defendant railroad company is affirmed, the evidence showed that the conductor, in his efforts to save the life of the injured man, exercised such care as a person of ordinary prudence would have exercised under like circumstances, and that the injured man, his wife and his friends all believed that it was best that he should be taken to the hospital at another station, as the conductor said should be done, and all in fact consented, tacitly at least, that he should be taken there. Under these circumstances to hold the company liable would be to penalize it for doing everything in its power to save the life of its injured employee.

Society Proceedings

COMING MEETINGS

Am. Assn. of Electro-Therapeutics and Radiology, Boston, Sept. 10-12.
Am. Assn. of Obstetricians and Gynecologists, Detroit, Sept. 16-18.
American Association of Railway Surgeons, Chicago, Oct. 16-18.
American Public Health Association, Chicago, Oct. 14-17.
Colorado State Medical Society, Estes Park, Sept. 9-11.
Delaware State Medical Society, Wilmington, Oct. 8.
Indiana State Medical Association, Indianapolis, Sept. 25-27.
Missouri Valley Medical Society, Omaha, Sept. 19-20.
New Mexico Medical Society, Albuquerque, Oct. 7-8.
Ohio State Medical Association, Columbus, Oct. 1-3.
Pennsylvania State Medical Society, Philadelphia, Sept. 23-26.
Utah State Medical Association, Salt Lake City, Sept. 10-11.
Vermont State Medical Society, Burlington, Oct. 10-11.
Virginia State Medical Society, Richmond, Oct. 22-25.
West Virginia State Medical Association, Harpers Ferry, Oct. 1-3.
Wisconsin State Medical Society, Milwaukee, Oct. 2-4.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Diseases of Children, Chicago

August, 1918, **16**, No. 2

1 Neuroblastoma Sympathicum; Report of Case. S. B. Wolbach and J. L. Morse, Boston.—p. 63.
2 Variations in Lipoid ("Fat") Content of Blood of Infants Under Certain Nutritional Conditions. W. McK. Marriott, St. Louis, and W. R. Sisson, Boston.—p. 75.
3 *Active Immunization of Infants Against Diphtheria. A. Zingher, New York.—p. 83.
4 Infantilism, with Two Cases of Brissaud and Frölich Types, Respectively. J. P. C. Griffith, Philadelphia.—p. 103.
5 *Intrathecal Injection of Horse Serum in Treatment of Chorea. L. Porter, San Francisco.—p. 109.
6 Breath Holding in Infants. I. A. Abt, Chicago.—p. 118.
7 Balantidium Coli Infection; Report of Case in Child. L. R. DeBuys, New Orleans.—p. 123.

3. Active Immunization of Infants Against Diphtheria.—Zingher would have all infants below 12, and if possible below 18 months of age, actively immunized with three doses, each 10 c.c. of toxin-antitoxin. These injections should be given irrespective of the Schick test the infants may show at the time of immunization. The injections are given subcutaneously in the arm or below the angle of the scapula, and repeated every seven days. The toxin-antitoxin is well tolerated by young infants, and for that reason the dose advised is the same as that given to older children. The relatively larger dose of toxin-antitoxin will, of course, also give rise to a better immunizing response. All children over 18 months of age, as well as all youths and adults, should be tested with the Schick reaction first, and only those giving a positive reaction immunized with toxin-antitoxin. Three injections, each 10 c.c., are given subcutaneously, one week apart. In infants below 18 months of age the Schick test is not a necessary part of the immunization, since all the infants should be actively immunized. The toxin-antitoxin mixture should be prepared in a reliable laboratory and carefully tested for potency in the guinea-pig before it is sent out for use. The mixture used should be slightly toxic and should represent about 85 per cent. of a lethal plus to each unit of antitoxin. The active immunization against diphtheria should be carried out first of all by the private physicians in the different homes, where a majority of the infants can be reached. In larger centers of population the milk stations, day nurseries, children's dispensaries, infant and orphan asylums furnish large groups of children suitable for immunization. The children of preschool age found in kindergartens and those of school age should be tested first with the Schick reaction, and those giving a positive test actively immunized. Adults, especially those frequently or constantly exposed to diphtheria, such as physicians, nurses, hospital orderlies and patients in contagious disease hospitals, should

also be tested with the Schick reaction and those giving a positive reaction actively immunized.

5. **Chorea Treated by Intrathecal Injection of Horse Serum.**—Intrathecal injections of horse serum have been instrumental in gaining striking and rapid improvement in most of the cases so treated by Porter, but no improvement has been such that a cure can be claimed on the basis of "absolute cessation of all twitching within a week." Only in the mild cases was twitching entirely absent after two weeks, and all three of these seven patients had been affected for at least three weeks before treatment was inaugurated. One patient, a girl (a mental defective with a neurotic heredity), showed absolutely no reaction to the injections of serum. The most striking results followed the use of the horse serum in the maniacal and very severe cases. Before the serum was used, two of these patients could be kept in bed only by the use of restraining packs, but within forty-eight hours after the first injections both were able to carry a cup to their mouths and to drink without any assistance from the nurse. The restraining pack was no longer necessary and there was a steady diminution in all the excessive movements, while the mental conditions, especially the emotional overflow, were markedly improved. By the end of the third week it was with difficulty that choreic movements could be brought out, but even then they could be elicited by allowing excessive excitement or persistent mental strain to affect the patient. Porter sums up his ideas on this subject by stating that on the whole the result obtained does not encourage the hope that this is any advance on other methods of treatment. Porter states that undoubtedly the use of horse serum is of great value in controlling the very severe cases, but one would not choose to use horse serum in the treatment of any moderately severe or mild case.

Boston Medical and Surgical Journal

August 8, 1918, **179**, No. 6

8 Physical Examination as Civil Service Instrument. A. F. Downing, Cambridge.—p. 181.
9 *Studies in Personality Among Feebleminded Delinquents Seen in Court. V. V. Anderson and C. M. Leonard, Boston.—p. 192.
10 Fracture of Long Bones; Clinical Study. F. Reder, St. Louis.—p. 197.

9. **Personality Among Feebleminded Delinquents.**—The object of this paper is to call attention to the value of certain facts other than the mere diagnosis of feeblemindedness that are distinctly worth while in the consideration of the case of a feebleminded delinquent in court. For this purpose 100 cases were chosen. These were all adult women, ranging in age from 17 to 55 years. The mental age of each of these persons was determined by means of the Yerkes-Bridges point scale and Goddard's revision of the Binet scale. The diagnosis of feeblemindedness was arrived at by the usual methods. Sixteen per cent. were undoubtedly self-supporting, steadily employed, and apparently gave satisfaction where they worked; 38 per cent., while more or less self-supporting, changed positions frequently, and worked irregularly; 35 per cent. never worked at all; while 11 per cent. did housework at home. Eighteen per cent. never used alcohol or drugs; 82 per cent. used alcohol, 5 per cent. used drugs as well as alcohol. Nineteen per cent. were moral, while 81 per cent. were undoubtedly immoral women. Twenty per cent. were first offenders, 80 per cent. were repeaters. Anderson and Leonard call attention to the fact that some feebleminded persons seem to get along fairly well under outside supervision, and do avoid serious social difficulties, and therefore are not necessarily—because they are feebleminded—vicious, incorrigible and irresponsible. However, the majority of feebleminded delinquents seen in court are institutional cases, and are incapable of measuring up to the social standards of the community in which they live.

California State Journal of Medicine, San Francisco

August, 1918, **16**, No. 8

11 Prevention of Blindness Work of State Industrial Accident Commission. W. J. French, San Francisco.—p. 277.
12 Plea for Complete Urologic Diagnosis at One Sitting. M. Krotoszyner and G. W. Hartman, San Francisco.—p. 278.
13 *Prevention of Congenital Syphilis by Antisyphilitic Prenatal Therapy. H. Lisser, San Francisco.—p. 284.
14 Results Following Operative Treatment of Pelvic Inflammatory Disease in Stanford University Clinic. J. A. Sperry, San Francisco.—p. 288.
15 Training of Fixation and Fusion in Strabismus. K. Pischel, San Francisco.—p. 291.

13. **Prevention of Congenital Syphilis by Antisyphilitic Prenatal Therapy.**—Most cases of congenital syphilis have been preceded by two or three miscarriages, premature births or stillborn children due to syphilis. Proper treatment of acquired syphilis before pregnancy will to a considerable extent diminish this waste, which can at best be only partially controlled. But intensive treatment of every syphilitic mother during her pregnancy will (*a*) prevent miscarriages, premature births, and stillbirths due to syphilis, in the vast majority of cases; (*b*) produce a live child at full term who will not develop congenital syphilis, in the majority of cases. Such treatment does not interfere with the normal course of pregnancy, labor or puerperium. Lisser urges that such antenatal therapy should be widely advocated by medical men of prominence and influence, in order that it may become a well established routine procedure. Immediate widespread adoption of this method will insure a large increase in the future population of the world.

Canadian Medical Association Journal, Toronto

August, 1918, **8**, No. 8

16 Psychogenetic Conditions in Soldiers, Their Etiology, Treatment and Final Disposal. C. K. Russel.—p. 673.
17 Chirurgico-Orthopedic Observations and Moral Treatment of Wounded Man. I. H. Cameron.—p. 685.
18 Surgery of Nerve Injury. H. Williams, London, Ont.—p. 693.
19 Rôle of Physiotherapy in Treatment of Returned Invalided Soldier. R. Wilson.—p. 700.
20 Industrial Rehabilitation. H. E. T. Haultain, Toronto.—p. 703.
21 Present Position of Vaccine Therapy. W. Boyd.—p. 706.
22 Public Health. T. J. Norman, Alberta.—p. 718.
23 Blindness of Newborn—Preventable Disease. G. G. Copeland, Toronto.—p. 724.

Cleveland Medical Journal

June, 1918, **17**, No. 6

24 Typhoid in Cleveland in 1917. M. E. Fulk and R. G. Perkins, Cleveland.—p. 359.
25 Simple Hematologic Methods and Diagnostic Significance of Findings. C. L. Cummer, Cleveland.—p. 373.

Florida Medical Association Journal, Jacksonville

June, 1918, **4**, No. 12

26 Our Needs in Medical Legislation. F. J. Walter, Daytona.—p. 354.
27 Eye from Standpoint of General Practitioner. M. P. DeBoe, Cocoa.—p. 357.
28 Autogenous Vaccines in Treatment of Diseases of Ear, Nose and Throat. H. H. Fox, Miami.—p. 360.
29 Qualifications of Examiner and Examination to Correct Defects of Sight. L. C. Ingram, DeLand.—p. 361.

Journal of Experimental Medicine, Baltimore

August, 1918, **28**, No. 2

30 *Experimental Trypanosomiasis; Its Application in Chemotherapeutic Investigations. L. Pearce and W. H. Brown, New York.—p. 109.
31 Studies in Bovine Mastitis. Nonhemolytic Streptococci in Inflammation of Udder. F. S. Jones, Princeton, N. J.—p. 149.
32 *Classification of Hemolytic Streptococci. R. A. Kinsella and H. F. Swift, New York.—p. 169.
33 *Relation Between Hemolytic and Nonhemolytic Streptococci and Its Possible Significance. R. A. Kinsella, New York.—p. 181.
34 *Renal Function in Experimental Hydronephrosis. R. A. Johnson, Minneapolis.—p. 193.
35 Proteose Intoxications and Injury of Body Protein. Toxic Protein Catabolism and Its Influence on Nonprotein Nitrogen Partition of Blood. G. H. Whipple and D. D. Van Slyke, New York.—p. 213.
36 Id.: Metabolism of Dogs with Sterile Abscess, Pancreatitis and Pleuritis. J. V. Cooke and G. H. Whipple, San Francisco.—p. 223.
37 Id.: Increase in Nonprotein Nitrogen of Blood in Acute Inflammatory Processes and Acute Intoxications. J. V. Cooke and G. H. Whipple. San Francisco.—p. 243.

30. **Experimental Trypanosomiasis.**—The authors endeavor to show that the use of experimental trypanosomiasis in chemotherapeutic experiments should be based on a clear

conception of the experimental disease as it occurs in laboratory animals and that the use of one or another of the experimental infections is not to be undertaken in a haphazard fashion but that there are definite principles on which the experiments may be based. In the first place, one must know the behavior of the various species of trypaosomes in the animal body, the character of the infection produced, and the response which may be expected from these organisms to the particular class of therapeutic agents to be employed, and further than this, one must know even the peculiarities of the particular strain to be used. It is of equal importance also that one should be familiar with the various factors which may influence these reactions and the means to be employed to insure constancy of reaction under all circumsctances. Finally, one should realize clearly that limitations to the usefulness of any particular form of the experimental infection or species of trypanosome as well as the limitations to deductions which may be drawn from all classes of experiments. In order to reproduce experimental conditions analogous to the natural infections of man and animals, Pearce and Brown have utilized the rabbit as the animal that most nearly fulfils the desired requirements. From this point of view, the results of treatment of chronic tissue infections are indicative of curative power or therapeutic potency as contrasted with trypanocidal action.

32. **Classification of Hemolytic Streptococci.**—Twenty-eight strains of streptococci of the hemolytic type from various pathologic sources were studied by Kinsella and Swift and their cultural characteristics, power to produce hemolysis of red cells, and behavior in the complement fixation reaction are reported. The chief conclusions as to variability are drawn from a consideration of the complement fixation reactions between these hemolytic strains and their corresponding antiserums. The several variations in fermentative activity noted by others were present in this series. The similarity between all the strains studied was strikingly emphasized by the complement fixation reactions. Although the strains came from different pathologic sources and displayed many superficial variations in cultural activity, judged by the complement fixation test all the strains were nearly identical.

33. **Hemolytic and Nonhemolytic Streptococci.**—Kinsella claims that the relation between hemolytic and nonhemolytic streptococci is orderly and arises from the fact that the former variety is unique while the latter is heterogeneous. Analogous considerations of the classification, distribution, and pathogenicity of the streptococcus group and the pneumococcus and colon typhoid groups show a definite parallelism. These considerations suggest that unique varieties of bacteria associated with man are the more highly invasive, while the heterogeneous varieties are more saprophytic.

34. **Renal Function in Experimental Hydronephrosis.**—The object of Johnson's investigation was the study of the function of kidneys in the early stages of experimental hydronephrosis by means of the phenolsulphonephthalein test of Rowntree and Geraghty. He found that complete obstruction of the ureter causes atrophy of the renal parenchyma, especially marked in the portions lateral to the renal sinus. The longer the duration of the obstruction, the greater is the degree of atrophy. If the obstruction is removed within two weeks the kidney may regain its normal structure except for a varying amount of atrophy in the lateral portions. Kidneys obstructed for two weeks or less may regain their normal function, as measured by the phenolsulphonephthalein test. The longer the period of obstruction, the slower is the rate of recovery. A hydronephrosis of seven days' duration required forty days, and one of fourteen days' duration required 152 days to recover normal function.

Journal of Infectious Diseases, Chicago

August, 1918, **23**, No. 2

38 Life Phases in Bacterial Culture. R. E. Buchanan, Ames, Iowa. —p. 109.

39 *Repeated Agglutination Tests by Dreyer Method in Diagnosis of Enteric Fever in Inoculated Persons. E. B. Krumbhaar and W. B. Smith, France.—p. 126.

40 *Antigenic Properties of Gelatin. W. A. Starin, Columbus, Ohio. —p. 139.

41 *Effect of Exposure to Cold on Antibody Production. A. G. Foord, Chicago.—p. 159.

42 Hormone Medium. Simple Medium Employable as Substitute for Serum Medium. F. M. Huntoon.—p. 169.

43 *Influence of Incubation on Wassermann Reaction. E. H. Ruediger, Bismarck, N. D.—p. 173.

44 *Streptothrix Isolated from Blood of Patient Bitten by Weasel (Streptothrix Putorii). G. F. Dick and R. Tunnicliff, Chicago. —p. 183.

45 Simultaneous Acid and Alkaline Bacterial Fermentations from Dextrose and Salts of Organic Acids Respectively. S. H. Ayers and P. Rupp, Washington, D. C.—p. 188.

39. **Agglutination in Persons Inoculated Against Typhoid.**—Krumbhaar and Smith maintain that the diagnosis of fevers of the enteric group may be made by agglutination tests in many cases when cultures have been negative, but the test should never be used as a substitute for cultures. In inoculated individuals the diagnosis may be made by quantitative agglutination tests, if three or more tests are made at suitable intervals and the resulting curve interpreted in the light of the inoculation and clinical data and the date of onset of the disease. The Dreyer macroscopic method used with standardized agglutinable cultures not only gives excellent results, but allows comparison to be made of results obtained at different times in different laboratories. These results should be expressed in agglutinin units. For proper comparison, every step in the method should be standardized. Distilled water should be uniformly used as a diluent, and that readings should always be made with a hand glass (4 diameters) in the illumination advised by the Oxford Standard Laboratory. If standard agglutinable cultures are used, they should be carefully guarded against contamination. If contamination occurs, especially if they have become acid, they should be at once discarded. The authors present figures showing the gradual fall in T. A. B. agglutinins in forty inoculated individuals. If the presence of agglutinins may be taken as an index of protection, these and similar tests show that the methods of prophylactic inoculation now in vogue protect the average individual for more than a year. There is, however, considerable variation in the individual response, and apparently also in batches of vaccine. Figures are also given to show that paratyphoid B inoculation in persons who have already received typhoid and paratyphoid A vaccine, causes a distinct rise in the typhoid agglutinin curve. A single experiment is given which tends to show that as compared with the American method now in vogue, more efficient prophylactic inoculation may be obtained by giving two (or possibly even single) doses at more frequent intervals.

40. **Antigenic Properties of Gelatin.**—A study made by Starin of the results of anaphylactic, precipitin, complement-binding, and meiostagmin reactions, shows that all were constantly negative, with gelatin as an antigen, in rabbits, guinea-pigs, and dogs, the recipients of the injections.

41. **Effect of Cold on Antibody Production.**—Chilling rabbits twice a day during the period of immunization for periods of seven to ten minutes in water at 8 C. did not cause any change in the hemolysin production for sheep corpuscles, and a single chilling seventeen to twenty-nine days after the period of immunization failed to change the hemolysin content of the serum. Chilling rabbits thoroughly during the period of immunization caused a moderate increase in agglutinin production for *B. typhosus*. Chilling once fifteen days after the period of immunization caused an increase in the agglutinin content of the serum, which increase persisted for twenty-four hours. Cold baths in ice water at 0 C. for one to ten minutes failed to cause hemorrhages or thrombosis in the lungs of rabbits.

43. **Incubation and Wassermann Reaction.**—Ruediger presents the results he obtained with the Wassermann reaction under different incubation conditions. Only one antigen was employed, and the only difference there was, was in incubation time and method. He found that complement binding is better in the incubator at a temperature of 37 C. than in the open water bath at the same temperature. Complement binding takes place gradually, many hours being required for its completion. Complement binding is much better at a temperature of 10 C. than at a temperature of 37 C. or of 21 C.

Ruediger suggests that perhaps the optimum temperature for complement binding and the length of time necessary for its completion in the Wassermann reation have not yet been determined.

44. **Streptothrix Putorii.**—The clinical picture in the case studied by Dick and Tunnicliff was similar to that of a rat-bite fever, but the streptothrix isolated from the blood differs both morphologically and culturally from the organism associated with that disease, *Streptothrix muris-ratti.*

Journal of Nervous and Mental Disease, Lancaster, Pa.

July, 1918, **48**, No. 1

46 Certain Plurighndular Anomalous Functions Associated with Psychopathic Sexual Interests. M. O'Malley, Washington, D. C. —p. 1.
47 Analysis of Action of Morphin on Vegetative Nervous System of Man. W. M. Kraus, New York.—p. 36.

Journal of Pharmacology and Experimental Therapeutics, Baltimore

July, 1918, **11**, No. 6

48 *Relation Between Chemical Structure of Opium Alkaloids and Their Physiologic Action on Smooth Muscle. Pharmacologic and Therapeutic Study of Some Benzyl Esters. D. L. Macht, Baltimore.—p. 419.
49 Toxicity of Venom of Mexican (Durango) Scorpion as Compared with that of Chinese Scorpion. S. Kubota, Baltimore. —p. 447.

48. **Pharmacologic Study of Benzyl Esters.**—A pharmacologic study of the benzyl esters, benzyl benzoate and benzyl acetate, showed that these esters produce the same effects on smooth muscle tissues as the opium alkaloid papaverin. Benzyl benzoate and benzyl acetate are easily metabolized by the body and are comparatively nontoxic. The low toxicity and the papaverin-like action of the benzyl esters on smooth muscle has led to their clinical employment in conditions of excessive peristalsis or spasm of smooth muscle viscera, with successful results.

Medical Record, New York

August 17, 1918, **94**, No. 7

50 Treatment of Duodenal Ulcer. G. R. Satterlee, New York.—p. 265.
51 Treatment of Intestinal Stasis by Duodenal Lavage. C. D. Aaron, Detroit.—p. 268.
52 Serum and Vaccine Treatment of Pneumonias. F. E. Stewart, Philadelphia.—p. 270.
53 Acute Intestinal Obstruction. J. M. Lynch and J. W. Draper, New York.—p. 274.
54 Variable Hyperopic Astigmatism in Children and Its Correction. E. S. McClelland, Los Angeles.—p. 276.
55 Rabelais' Mention of Parts of Human Skeleton, D. W. Montgomery, San Francisco.—p. 279.
56 Homigrade Thermometer. F. E. Aspinwall, La Grange, Ky.—p. 281.

Military Surgeon, Washington, D. C.

August, 1918, **43**, No. 2

57 How United States Is Meeting Tuberculosis War Problem. G. E. Bushnell.—p. 127.
58 *Tuberculosis as Army Problem. L. Brown and J. H. Pratt.—p. 139.
59 Statistical Review of Pulmonary and Cardiovascular Defects Found in 82d Division, U. S. National Army, Camp Gordon; Report on After-Results in Five Hundred Measles Cases. A. P. Francine.—p. 160.
60 Venereal Disease Problem at Camp Bowie, Fort Worth, Texas. R. F. Metcalfe.—p. 174.
61 Radical Treatment of Local Venereal Diseases by Cauterization and Circumcision. G. L. Qualls.—p. 179.
62 Plan for Better Handling of Venereal Diseases in Army. L. Thompson.—p. 184.
63 Work of Urologic and Venereal Service of Base Hospital, Camp Lewis, American Lake, Wash. A. H. Peacock.—p. 187.
64 Painful Abdominal Scars. E. P. Quain and C. Eggers.—p. 195.
65 English Orthopedic Hospital for Treatment of Chronic Disabled Soldiers and Sailors. C. M. Allaben.—p. 200.

58. **Tuberculosis as Army Problem.**—Brown and Pratt urge that the men should be examined sooner after their arrival at camp, and that twenty-five men should be sent to the examining boards every half hour, supplied with clean handkerchiefs and, if questionnaires be used, with pencils. The questionnaires are valuable in the tuberculosis examinations for several reasons—they suggest a more careful examination when questions have been answered affirmatively; they are a check on the men examined; they saved time as the man, transferred from board to board, had always his record with him; and, finally, they kept together all records and examinations made of each man and could be returned to the original board. The authors praise Bushnell's rapid auscultatory method in tuberculosis examination in the Army, and suggest: (*a*) That on the rapid examination, all suspicious cases should be kept for reexamination until the quota for the morning or afternoon be finished. (*b*) That day in and day out, morning and afternoon, the most suitable number of examinations proved to be about forty for each examiner (eighty a day), and this could for a time be increased to fifty. (*c*) That fuller description of the examinations required should be furnished the examiners and should include instructions somewhat as follows: (1) Use auscultation only in first rapid examination. (2) Listen to the breathing in four or five places at least on each side, front and back, before using the auscultatory cough. (3) Use the auscultatory cough whether the breathing is normal or abnormal (Circular No. 20 does not make this clear). (4) Any man with râles detected by two members of the board should be referred to the tuberculosis specialist for study. (5) Attention should be called to the fact that, as Laennac has pointed out, too hard coughing obscures rather than helps the detection of râles.

The authors recommend that the entire board meet weekly with the roentgenologist and tuberculosis specialist to consider the cases referred to the tuberculosis specialist and by him accepted or rejected. At such conferences difficulties can be discussed and the workers greatly stimulated. It is suggested that the examiners be urged to check up their physical examinations with the roentgen ray, but that they should recall that a negative roentgenogram especially a flat plate, does not exclude the presence of pulmonary tuberculosis. However, such instances are of rare occurrence. The authors would urge that a ward be set aside in the base hospital in each camp for the study of men suspected of pulmonary tuberculosis, and it be equipped with scales and with a measuring rod. It is further recommended that the tuberculosis wards in the base hospital be used for the instruction in the art of diagnosis of pulmonary tuberculosis of all ward surgeons and other men on the medical staff, as well as all regimental surgeons, who are not proficient in this work. Colonel Bushnell's efforts to teach this to the Medical Corps of the Army are praised highly.

Brown and Pratt also recommend that careful records of the work of each member of the board should be kept and checked up from time to time, in order to eliminate from the board careless and inefficient men. The members of the tuberculosis disability board should be men who have had experience in dealing with pulmonary tuberculosis, and, if at all possible, men who have seen pulmonary tuberculosis in the Army. The president of the tuberculosis board should see that his assistants use the same terminology, that suggested by Colonel Bushnell. The differentiation of the types of râles is most important. To obtain the best results, the tuberculosis board should work in harmony with the division, brigade and regimental officers, realizing the great strain under which they, too, labor. Greater provision should be made for the future disposition of the tuberculous soldier, when he has been in camp over two months. Even with great care, certain cases will develop tuberculosis when least expected. More sputum examinations should be made, even when the sputum is not collected under surveillance. If possitive, the man should be admitted to the base hospital and several sputum specimens, collected under observation, examined. On each man's discharge card or blank should be noted the reasons for his discharge and, if due to pulmonary disease, the location of such disease and the fact whether or not tubercle bacilli have been found.

Minnesota Medicine, St. Paul

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66 Diagnosis and Treatment of Brain Injuries with or without Fracture of Skull. W. Sharpe, New York.—p. 285.
67 Diagnosis and Treatment of Tuberculous Arthritis of Hip Joint. H. W. Meyerding, Rochester.—p. 291.

68 Some Rare Pathologic Conditions of Appendix; Report of Cases. G. A. Geist, St. Paul.—p. 295.
69 Essentials in Pediatric Diagnosis. G. E. Zimmerman, Sioux Falls, S. D.—p. 298.
70 One Thousand Consecutive Cases of Confinement. F. H. Knickerbocker, Staples.—p. 303.

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71 Righthandedness in Its Relation to Visual Conditions. G. T. Stevens, New York.—p. 269.
72 Blood and Soul. J. Wright, Pleasantville.—p. 271.
73 Congenital Syphilis and Physician. J. M. Wallfield, New York.—p. 277.
74 Preventive Treatment of Bone and Joint Maladies. F. Pridham, Baltimore.—p. 279.
75 Thyroid Gland. L. J. Simonton, Cumberland Valley, Pa.—p. 281.
76 Heart in Pulmonary Tuberculosis. H. Schwatt, New York.—p. 282.
77 Immunization Therapy in Bronchial Asthma. A. I. Rubenstone, Philadelphia.—p. 285.
78 Prevention vs. Treatment in Tuberculous Laryngitis. M. Lubman, New York.—p. 287.
79 Reconstructive Therapeutics. J. M. Taylor, Philadelphia.—p. 289.

New York State Journal of Medicine

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80 *Ophthalmic Changes in Tabes and Paresis. I. S. Wechsler, New York.—p. 304.
81 Epidemiology of Contagious Diseases of Eye. M. Cohen and H. Noguchi, New York.—p. 313.
82 Diarrheal Diseases of Infancy. R. Sloan, Utica.—p. 317.
83 *Intestinal Intoxication in Infants. O. M. Schloss, New York.—p. 324.
84 *Complement Fixation with Specific Antigen in Acute Poliomyelitis. M. Neustaedter, New York.—p. 328.
85 Early History of Infantile Paralysis. L. C. Ager, Brooklyn.—p. 330.
86 Chemical Examination of Blood and Urine in Normal Pregnancy and in Toxemia of Pregnancy. J. R. Losee, New York.—p. 333.

80. Changes in Tabes and Paresis.—From the study of the more recent investigations of the pathology of neurosyphilis, particularly with reference to optic changes, Wechsler has gained the impression that there is no fundamental difference between tabetic neurosyphilis and so-called cerebrospinal or, better, diffuse neurosyphilis. It seems evident that an inflammatory process is behind every form of syphilitic involvement and that the spirochete is at the bottom of the reaction. Obviously, the inflammatory reaction is in direct proportion to the kind of tissue involved. There is every reason why the meninges should respond more violently than the parenchyma of the brain. The reaction, too, of vascular, interstitial structures will be of a different nature than that of parenchymatous tissue. But lymph and plasma cell infiltration and mast cells are the fundamental characteristics of syphilis. This picture occurs in tabes, paresis and optic atrophy, just as it does in interstitial neurosyphilis or, say, aortitis. There is, therefore, no valid reason for calling a protean clinical picture cerebrospinal syphilis. In the first place, tabes and paresis are anatomically just as cerebral and spinal, and secondly, the pathology is based in all cases on a similar reaction to the same agent. Wechsler uses the term interstitial, or diffuse, neurosyphilis instead of cerebrospinal syphilis. Very careful examination of the optic nerve has revealed inflammatory reactions, even in very old cases of optic atrophy. Wechsler believes that it would be advisable therefore to drop the term primary optic atrophy or, rather, employ it in the sense that the atrophy takes place *pari passu* with the inflammatory, exudative process. It is equally descending with an inflammatory neuritis, though the vascular changes are not nearly so violent. Wechsler suggests that if the inflammatory character of optic atrophy will come to be recognized, it may be possible to attempt rational and possibly hopeful treatment in cases which have hitherto been the despair of therapeutics.

83. Intestinal Intoxication in Infants.—If the patient is not vomiting and the diarrhea is not severe, Schloss gives sodium bicarbonate by mouth in 3 to 5 per cent. solution. Milder grades of acidosis may be corrected in this manner. In the presence of severe vomiting or diarrhea or if the acidosis is severe it is necessary to give the bicarbonate intravenously or subcutaneously. For such administration the solutions should be prepared specially. For intravenous injection a 4 per cent. solution of sodium bicarbonate is used, for subcutaneous injection a 2.5 per cent. solution. For most cases a subcutaneous injection is sufficient. Intravenous injection should be given only when the acidosis is very severe, and not until measure have been taken to replace the loss of fluid. Otherwise the concentration of the blood may be much increased and harm result. By means of this treatment, the toxic symptoms in most cases of intestinal intoxication may be eliminated.

84. Complement Fixation with Specific Antigen in Acute Poliomyelitis.—A specific antigen is prepared by Neustaedter in the following manner: A 5 per cent. suspension of brain and cord of monkeys, that have died of poliomyelitis, is filtered through a Berkefeld or a Heim filter, sterile water being used as a menstruum. Trypsin is added in proportion of 1:50 and permitted to act at room temperature for three hours; 0.4 per cent. tricresol is then added to stop further action by the trypsin. This is kept in a refrigerator and ready for use. It keeps well for a month without impairing its activity. In making the tests the antigen is diluted 1:5, the spinal fluid is used in ten times the amount of the serum. The tubes are incubated as a rule for two hours in the water bath at 37 C. Two units of complement and two units of amboceptor are used, the cells having been sensitized with the amboceptor before they are added; 0.1 c.c. of a 5 per cent. suspension of sheep's corpuscles was used for indicator of the reaction of fixation. The complement was a pool of the serum of from six to ten pigs in every set of tests. The serum from each pig had been tested before pooling for natural antisheep amboceptor, for specific fixation with each control antigen and serum combination to be used in the tests, for hemolysis of 0.1 c.c. of a 5 per cent. suspension of sheep's erythrocytes with the Wassermann unit of antisheep amboceptor. On hundred and fifty-two spinal fluids and sixty blood serums were examined. The cases were frank and suspected, in the febrile and afebrile stages. The duration of the disease was from one to forty days. Twenty-three, or 53.5 per cent., gave a positive reaction; twelve, or 27.9 per cent., gave a doubtful one, and four, or 9.5 per cent., a negative reaction. Of fifteen spinal fluids from cases of tuberculous meningitis seven proved negative with the poliomyelitis antigen, one +, one + +, six were anticomplementary. Of twenty spinal fluids of cases of epidemic cerebrospinal meningitis, thirteen were negative, three doubtful and four anticomplementary. Of twenty-two spinal fluids of cases of tertiary syphilis, one gave a + + + + reaction with the poliomyelitis antigen, one +, five +, three were anticomplementary and the rest negative. Of forty spinal fluids of normal and diverse pathologic conditions, one gave a + + + + reaction with the poliomyelitis antigen, seven were anticomplementary, and the rest negative. Of sixty blood serums of various pathologic conditions, none gave a positive reaction with the poliomyelitis antigen. It would appear that an antigen has been found which probably is specific and fixes complement, hence of positive diagnostic value in poliomyelitis.

Ohio State Medical Journal, Columbus

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87 Infection of Female Genital Tract; Its Relation to Arthritis. E. C. Steinharter, Cincinnati.—p. 468.
88 Hospital Standardization. H. K. Yaggi, Salem.—p. 470.
89 The Gallbladder from Surgical Standpoint. A. H. Dunn, Chillicothe.—p. 473.
90 Evisceration. J. H. McCassy, Dayton.—p. 476.

Oklahoma State Medical Association Journal, Muskogee

August, 1918, 11, No. 8

91 Rectal Examination in Labor. C. V. Rice, Muskogee.—p. 251.
92 Prevention and Treatment of Puerperal Laceration. W. W. Wells, Oklahoma City.—p. 258.
93 Surgical Aspects of Obstetrics. E. F. Hayden, Tulsa.—p. 264.
94 Typhoid. T. W. Brewer, Miami.—p. 270.

Rhode Island Medical Journal, Providence

August, 1918, 2, No. 8

95 Medical Activities of Navy. J. C. Da Costa.—p. 115.
96 American Flag. S. H. Davis, Westerly.—p. 123.

Surgery, Gynecology and Obstetrics, Chicago

August, 1918, 27, No. 2

97 *Experience with Foerster's Operation for Gastric Crises and Spastic Paralysis. K. Kawamura and T. Kimura, Kyoto, Japan. —p. 129.
98 *Esophageal Diverticula. E. S. Judd, Rochester, Minn.—p. 135.
99 Epithelioma. A. C. Broders and W. C. MacCarty, Rochester, Minn.—p. 141.
100 Exfoliative Vaginitis; Report of Cases. W. Kerwin, St. Louis. —p. 151.
101 Fibrosarcoma of Mesentery. B. Solomons, Dublin, Ireland.—p. 154.
102 Surgical Methods in Treatment of Malign Affections of Superficial Lymphatic Tissue. J. L. Yates, Milwaukee, Wis.—p. 156.
103 *Induction of Labor at Term. C. B. Reed, Chicago.—p. 163.
104 Problem of Reconstruction and Reeducation of Disabled Soldier. R. W. Lovett.—p. 169.
105 Combined Inguinofemoral Hernia Due to Suppurative Destruction of Poupart's Ligament, with Use of Sartorius Muscle in Repair. E. D. Twyman, Kansas City, Mo.—p. 182.
106 Case of Aberrant Thyroid Tumor of Tongue. M. A. Rabinowitz, Brooklyn.—p. 191.
107 *Study of Krukenberg Tumor. R. H. Major, Rosedale, Kan.—p. 195.
108 Carcinoma of Umbilicus; Report of Two Cases. F. Warner, Columbus.—p. 204.
109 Extraperitoneal Cesarean Section in Certain Infected Cases with Carrel After-Treatment. J. W. Markoe, and R. McPherson, New York.—p. 209.
110 Lipemata in Sarcomatous Transformation; Report of Two Cases. H. Schiller, Chicago.—p. 218.
111 *Case of Gastric Ulcer Caused by Shell Fragment. L. Leyva, France.—p. 220.
112 Case of Transfusion of Blood in Septicemia of Long Duration. C. Moncany, France.—p. 221.
113 Unusual Propagation of Vascular Bruit. C. Moncany, France. —p. 222.
114 *Modified Rammstedt Operation for Relief of Pyloric Obstruction in Infants. R. C. Cupler, Chicago.—p. 223.
115 Radical Cure of Hemorrhoids. C. J. Drueck, Chicago.—p. 224.
116 Artificial Vagina Utilizing Single Portion of Ileum. A. W. Abbott, Minneapolis.—p. 227.
117 Improved Murphy Drip Apparatus. H. D. Furniss, New York. —p. 229.

97. **Foerster's Operation for Gastric Crises and Spastic Paralysis.**—Foerster's operation was performed successfully in two cases cited by the authors. In the first case, vomiting and pain stopped entirely from the day following the operation and with a normal appetite of a healthy person, the patient gained in weight daily. The second patient, a boy, who could not stand up at all before the operation, walked fairly well with crutches and especially well when led by the hand. But at times after the rhizotomy, paraplegia occurred, which later disappeared partially although not completely. As its causes, the following technical failures are enumerated: harsh treatment of the spinal cord, injury of small arteries resulting in hemorrhage into dural sac and disturbance of nutrition of the cord, excessive desiccation of the cord on account of a long-continued depression of the head with elevated pelvis. Therefore, if a final decision as to the results of the operation is to be given, it is necessary to observe the patient for a long time afterward. In Little's disease, the after-treatment of the patient is of supreme importance. The use of the plaster of Paris bandage, with its covering easily removable, suitable exercise, massage, electrotherapy, etc., should be continued for some time.

98. **Esophageal Diverticula.**—In thirty-five cases in which operations were done in the Mayo Clinic there were two deaths. In each instance death occurred on the second day; both patients were very old and feeble. The cause of death in both instances was cardiac disorder. One died after the first of a two-stage operation; one after excision of the sac and inversion of the base. In one of these, because of many general contraindications to operation, the patient was taught to pass a stomach tube, and for some months he lived by feeding himself in that manner; then the sac became so large that it produced a great deformity in the esophagus. The patient could no longer pass the tube and an operation seemed imperative. The first stage of the operation was performed but death took place suddenly the next morning. The history of the second patient is much the same, except that the sac was smaller and was removed at one operation. This patient also died the morning following the operation. In two of the remaining cases, there was some evidence of a recurrence of the diverticulum. One of these patients was entirely relived by passing a sound a few times, and in the other case it was necessary to reoperate for the recurrence. When heard from recently nearly all of the thirty-three patients were entirely free from symptoms. Judd believes that the infolding operation and the two-stage operation are the procedures preferred and can be performed with practically no mortality. In operating on these cases, the approach was from the left side of the neck in all except one case and that was from the right side. In six cases a transverse incision was made. One patient had been operated on for diverticulum one year before coming to the clinic. There was recurrence in one case. The patient began to have trouble about one month after operation and was operated on nine months later by the two-stage operation. This was the only recurrence in the series. The sac was excised and the base inverted in eighteen cases. The sac was excised and the base ligated and turned in in four cases. The Bevan operation was done in three cases. The two-stage operation (C. H. Mayo) was done in ten cases. There were two deaths following operation, both on the second day. Both patients were known to be poor surgical risks; one a male aged 76 years, the other a male aged 73 years.

103. **Induction of Labor at Term.**—Reed reports the results of his method of inducing labor by introducing a Voorhees bag in a second series of 100 cases, primiparas fifty-one, multiparas forty-nine. The average duration of labor was eight hours and eight minutes. This figure is greater by fifty-three minutes than the average in the first series, but it may possibly be accounted for by the presence of sixteen more primiparas in this series. The longest labor was twenty-eight hours; the shortest, one hour. The shortest labor in a primipara was one hour and twenty-five minutes. The bag broke during or shortly after insertion, three times; but it was reinserted only once. The membranes were ruptured by the introduction of the bag five times. In one case of hydramnios it was intentional. There were no maternal deaths. Forceps were used sixteen times, to hasten labor three, deep transverse arrest seven, uterine inertia four, occipitoposterior two; version and extraction was done twice, once to expedite labor in a heart case and once for prolapsed cord. The average time for the expulsion of the bag was three hours and nineteen minutes, as compared with three hours and twenty minutes in the previous series. The longest detention of the bag in the cervix was nine hours, the shortest ten minutes. In all cases but two, weights were applied after the introduction of the bag, the traction being just sufficient to keep up a mild pressure on the cervix. In no instance was it necessary to dilate the os before inserting the bag. Five cases required a few whiffs of chloroform during the introduction of the bag to control nervousness rather than actual pain. Involution was normal in all cases.

107. **Krukenberg Tumor.**—Including Major's case, at least fifty-five cases of Krukenberg tumor have been reported. To this number Major would add eight probable cases. Eighteen cases were collected in which the presence of a primary growth in the gastro-intestinal tract was demonstrated. Five cases have been reported in which no primary tumor of the stomach or intestines was observed at necropsy. Three of these may be open to the objection that no microscopic examination of the stomach was made. Two of the cases at least meet every apparent objection and cannot be regarded as other than primary ovarian tumors. In forty-three cases where the data were completed, the Krukenberg tumor was bilateral in thirty-nine instances (90 per cent.). The tumor occurred in the majority of cases during the period of sexual activity—the average age was 36 years. The statement sometimes made that the Krukenberg tumor is relatively benign is not borne out by the subsequent history of these patients. All of the cases reported in the literature where the later course was known terminated fatally.

111. **Gastric Ulcer Caused by Shell Fragment.**—A soldier, wounded at Verdun, April 23, 1916, by several splinters of shell, arrived at the American ambulance with the diagnosis of superficial wounds of the right thigh, left leg, forehead, and scalp. The wound of the thigh was the largest and

involved the external muscles. Many splinters were removed and the patient was completely healed of his wounds forty-five days after his arrival at the hospital. Just as he was about to be discharged, he complained of abdominal pain and said he had the sensation of a foreign body in his abdomen. Palpation did not reveal any muscular resistance, but the continuous pain in the epigastric region was more severe on pressure. The patient was a big and very fat man. There was no appreciable trace of any wound, but the abdomen was striated, as is often the case in stout people. Roentgen examination was negative. One night the patient complained of severe pain and on examining the feces Leyva noted the presence of blood, the feces being of a coffee ground color. He suspected gastric ulcer. The roentgen ray showed on the posterior wall of the stomach 2 inches from the pylorus, an ulceration of a half inch in diameter.

A superumbilical laparotomy, following the method of Pauchet, was performed. This method consists in opening into the lesser peritoneal cavity through the gastrocolic omentum in order to explore the posterior wall of the stomach. There were no adhesions, and exactly at the place indicated by the roentgen ray Leyva found an ulcer, nonperforated, and behind it a shell splinter very irregular and sharp pointed, about a half inch thick. Leyva calls attention to the possibility of a soldier having a splinter in his abdomen without any appreciable trace of a skin wound; that the roentgen ray does not always show the presence of foreign bodies; the great responsibility that rests with the war surgeon when he makes a diagnosis of malingering.

114. **Modified Rammstedt Operation for Relief of Pyloric Obstruction in Infants.**—The operation described by Cupler differs from the Rammstedt procedure only inasmuch as serosa is made to cover the mucosa.

Vermont Medicine, Rutland

July, 1918, **3**, No. 7

118 Indigestion. A. L. Patch, Windsor.—p. 165.

West Virginia Medical Journal, Huntington

July, 1918, **13**, No. 1

119 Gastrojejunostomy in Ulcerative Perforation of Duodenum. W. W. Golden, Elkins.—p. 1.
120 Paroxysmal Tachycardia. E. S. Dupuy, Beckley.—p. 2.
121 Clinical Consideration of Peptic Ulcer. J. A. Lichty, Pittsburgh.—p. 6.
122 History of Five of Fifteen Cases of Dementia Praecox Treated by Isotonic Salt Solution. L. V. Guthrie.—p. 14.

August, 1918, **13**, No. 2

123 Practical Points in Etherization. T. H. Becker, Bluefield.—p. 41.
124 Vesical Calculi. T. K. Oates, Martinsburg.—p. 47.
125 Diagnosis and Treatment of Cerebrospinal Syphilis. J. D. Willis, Roanoke, Va.—p. 49.
126 Mental Defectives. J. R. Bloss, Huntington.—p. 56.

Wisconsin Medical Journal, Milwaukee

August, 1918, **17**, No. 3

127 Epidemiology of Acute Appendicitis in Relation to Acute Nasal and Tonsillar Infections. J. S. Evans, Madison.—p. 91.
128 Value of Complement Fixation Test in Diagnosis of Tuberculosis. J. J. Seelman, Milwaukee.—p. 93.
129 Pathology of Glaucoma. C. Zimmermann, Milwaukee.—p. 98.
130 Eye in Its Relation to Constitutional Diseases. E. H. Brooks, Appleton.—p. 103.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

Journal of Tropical Medicine and Hygiene, London

July 15, 1918, **21**, No. 14

1 *Sudanese Streptococcal Dermatitis. A. J. Chalmers and R. G. Archibald.—p. 141.
2 *Curability of Madura Foot. F. Woolrabe.—p. 146.
3 *Treatment of Human Trypanosomiasis by Injectio Antimonii Oxid. W. E. Masters.—p. 146.

1. **Sudanese Streptococcal Dermatitis.**—Chalmers and Archibald describe a form of chronic infective eczema of the acanthotic type associated with a streptococcus, which apparently is, at all events at times, the sole causal agent. The lesions are types of a "streptococcal dermatitis" caused by *S. versatilis* Broadhurst, 1915, and are readily cured by vaccine therapy. This organism is a common denizen in the feces of horses in the Sudan and elsewhere, and hence the possible source of the infection.

2. **Curability of Madura Foot.**—Woolrabe cites a case to show that there are conditions in which patients with madura foot may recover. In 1915 a male Siamese, aged 25, came to the hospital very anemic and emaciated. His foot, a typical madura foot of the white kind, as shown by the microscope, was twice the normal size, honeycombed with sinuses, and with two toes gone. Treatment was more or less after the subjoined scheme, but he followed it only if and when he liked, namely: 1. Total immersion of foot in weak tincture of iodin solution, 1:50 or 1:100, for several hours a day. 2. Painting of foot and lower third of leg with tincture of iodin every three days. 3. Painting ulcerated surfaces with liquor epispasticus (official B. P. cantharides blistering solution) every week. 4. Occasional courses of potassium iodid by Curle's method (*Practitioner*, London, December, 1912). 5. Large doses of syrup of iron iodid and Easton's syrup at other times. He left without warning in about five months. Whether post or propter, his foot was of normal size, and the sinuses were healed. He could walk well and was in robust health.

3. **Treatment of Human Trypanosomiasis by Injectio Antimonii Oxid.**—Injectio antimonii oxid consists of antimony oxid dissolved in equal parts of glycerin and water slightly heated, and is prepared in capsules of 1 c.c. and 2 c.c., containing $\frac{1}{100}$ and $\frac{2}{100}$ grain each of the drug, respectively. It is prepared and supplied in 100 c.c. sealed phials, of which from 2 to 3 c.c. can be given at each injection, always intramuscularly and not subcutaneously. Sixty-three cases of trypanosomiasis were chosen by Masters for a series of experiments. Of these, thirty patients absconded before they had received $\frac{30}{100}$ grain of the drug. The remaining thirty-one patients received 925 capsules of the drug between them. These cases were divided into two classes, thus:

Class A: In all these trypanosomes were found in the gland juice on the first examination. Some of them were in the first and some were in the second stage of the disease—that is to say, some were curable and some were incurable. The attempt was to clear out the trypanosomes from the lymphatic circulation as ascertained by repeated gland punctures. Of the twenty-one cases in this class, twelve were found to be negative and nine positive after treatment. Of the nine positive cases only two had received the minimal course of $\frac{40}{100}$ grain of the drug.

Class B: In these the cervical lymphatic glands were so atrophied that no trypanosomes could be found, or if they were found at the onset, the disease was so advanced that repeated examinations later would have been impracticable. The purpose was to ascertain the influence of the drug on the course of the symptoms of the disease in late cases. Of the ten cases in this class, six patients died in whom no improvement was noted; one was slightly improved; two were much improved, and one was discharged free from all signs and symptoms of the disease. Masters is convinced that injectio antimonii oxid will clear the trypanosomes from the lymphatic circulation more readily than any drug or combination of drugs hitherto applied to the disease. The general symptoms are more rapidly and more generally cleared up than with any other medicaments. The drug should be given in $\frac{2}{100}$ grain doses every other day until a minimal dose of $\frac{40}{100}$ grain has been given. If the trypanosomes are not cleared out by the $\frac{40}{100}$ dose, sodium arsanilate, 0.77 gm., should be given in addition to more injectio antimonii oxid every fifth day. One large dose is more effective than many small doses.

Lancet, London

July 27, 1918, **2**, No. 4952

4 Pathology of War Neuroses. J. S. Bury.—p. 97.
5 Gunshot Wounds of Peripheral Nerves. C. Noon.—p. 100.
6 *Gunshot Wounds of Thorax; Their Later Stages. J. A. Wilson.—p. 102.
7 Capsulate Mucoid Forms of Paratyphoid and Dysentery Bacilli. W. Fletcher.—p. 192.

8 Trypsin Digested Blood Medium for Culture of Pfeiffer's Influenza Bacillus. J. Matthews.—p. 104.
9 Laked-Blood Agar Medium for Isolation and Cultivation of Meningococcus, Enterococcus and B. Typhosus. W. J. Wilson and G. Darling.—p. 105.
10 Military Orthopedic Surgery; Its Scope and Aims. R. Jones.—p. 115.

6. **Gunshot Wounds of Thorax.**—Fifty cases of gunshot wounds of the thorax in the later or terminal stages are analyzed by Wilson. On an average, the men were admitted eighteen days after being wounded. Wounds of entrance were: chest, nineteen; back, twelve; shoulders, eight; sides, seven, and neck, four. Seven cases of wounds of thoracic wall did not penetrate the pleura. Two of these had hemoptysis, four had hemothorax; of the latter two manifested pleuritic friction. One had a small swelling over the ribs due to incarceration of a piece of cloth; here also pleuritic friction was heard over the adjacent area. This came on late in the course of the illness, probably because of extension of the inflammation. One developed pneumonia and another a persistent form of basal congestion or bronchopneumonia. Thus, concussion may cause hemoptysis, hemothorax or pneumonia. In most of the cases of penetrating wounds, hemoptysis was present sometimes for several days after the wounding. Several men stated quite definitely that they did not spit blood, and yet they presented physical signs of effusion. In eight cases ribs were broken, in four the scapula, in two the humerus (one requiring amputation at the shoulder), in one the clavicle. In one, vertebrae were damaged; in one the esophagus was slightly damaged. In three, the pleura had been sewed up, in one, the diaphragm. In sixteen cases, the wounds were through and through; some of these had only short tracks through the lungs. Several did not present any physical signs of hemothorax. In thirteen cases, resection of the rib was performed for empyema. Several had physical signs of contralateral disease of the lung or pleura. Several cases with the physical signs of effusion were not aspirated, as there were no indications of sepsis; physical signs gradually disappeared. Pleuritic friction was frequently heard in the later stages. Twenty-eight, or more than half, returned to duty in from two to four months. Two patients died from septic pneumonia.

Medical Journal of Australia, Sidney

July 6, 1918, **2**, No. 1

11 Value of Roentgen Rays in Diseases of Alimentary Tract. H. Harris.—p. 1.
12 Value of Roentgen Rays in Gastro-Intestinal Diseases. C. Ayres.—p. 5.

July 13, 1918, **2**, No. 2

13 Bacteriologic Study of Seventy Cases of Urinary Infection, with Special Reference to Pyelitis. K. F. C. Brunnich.—p. 23.

Archives des Maladies du Cœur, etc., Paris

July, 1918, **11**, No. 7

14 *Acute Leukemia. C. Achard and A. Leblanc.—p. 289; L. Giroux and Verdier.—p. 309.

14. **Acute Leukemia.**—Achard and Leblanc report two cases in men of 46 and 63, fatal in about six weeks in one and in five and a half months in the other. In the first case the symptoms were those of a severe acute hemorrhagic infection with stormy onset and high fever; the other case progressed slowly and inexorably to the terminal cachexia without any acute incidents, but the blood picture was about the same in both. They give the tabulated details of similar cases from the literature and discuss some of the problems presented, the relations between the different elements of the blood, the nature of the reactions in the blood-producing organs, etc. In Giroux and Verdier's case the patient was a man of 25 who had been at the front for three years. The disease ran a rapidly fatal course in two weeks.

Archives Médicales Belges, Paris

February, 1918, **71**, No. 2

15 *Organization of the Surgical Service. Depage.—p. 113.
16 Tropical Dysentery in Spain. F. Martinez.—p. 124.
17 Segmentary Lymphoma of Jejunum. Delporte and Sand.—p. 135.
18 Inversion of Viscera; Two Cases. Colard and Couturier.—p. 140.

15. **Organization of Surgical Service.**—Depage's address "L'organisation sanitaire des armées" was presented at the recent Inter-Allied Surgical Conference. He discussed the subject from the standpoint of the treatment of wounds, which, he says, first entered on the scientific period with the introduction of the Carrel method. Carrel's innovation was not so much any special method of treating wounds, but the adoption of the principle that the whole treatment of the wounded must be according to a certain system from beginning to end, whatever hospitals he may pass through—the hospital system forming a whole with interchangeable parts, like an industrial establishment. The wounded man, through whatever hands he passes, gets uniform treatment. The authorities formally adopted in March, 1917, this principle of technical coordination so far as fractures were concerned. The principle of linked hospitals was applied in several sectors. Heitz Boyer's linked group included the hospital at Châlons, 28 km. from the front; here the urgent operations were done; then came the Troyes hospital, 70 km. farther back, to which the wounded were sent as soon as all danger of infection was past. They stayed here until the wound had healed or the fracture became consolidated. Then they passed to the *centre de physiothérapie*, only 3 km. distant, if there was hope of the men's returning to the service. If not, they were sent to the *filiale de reconstitution* near Fontainebleau, not far from Paris.

In Belgium conditions have not permitted this system of linked hospitals, the men being kept at the advanced hospital until complete recovery. This has numerous advantages in a quiet sector, but is out of the question during an offensive movement. In conclusion Depage emphasizes the tangible benefits from keeping abreast with the progress of science. Before the introduction of the Carrel method, less than 5 per cent. of the men with fracture of the femur recovered function enough to resume active service. Now nearly 50 per cent. return to the front. Since the beginning of the war France has dismissed from the service with a comparatively high pension 18,000 men with fractured femur. If the Carrel method had been applied from the first, 9,000 men could have been restored to the service and the treasury saved these 9,000 pensions, to say nothing of the saving from a shortened hospital stay, and the saving of man power. These figures illustrate the influence which war surgery exerts on the finances of a country according as it is well or badly applied.

Archives de Médecine et de Pharmacie Militaires, Paris

April, 1918, **69**, No. 4

19 *Primary Suture of War Wounds. G. Gross.—p. 481.
20 *The First Aid Station. M. Gaujard.—p. 499.
21 *Action of Microbes and of Antiseptics on Catgut Ligatures. K. Taylor.—p. 513.
22 *Backward Dislocation of Elbow. M. Verny.—p. 517.
23 Roentgen Localization of Projectiles. R. Bonneau.—p. 519; L. Roué.—p. 523.
24 *Mumps and Myocarditis. M. Pujol.—p. 527.
25 *Results of Physical Training. L. Lièvre-Brizard.—p. 539.
26 *Present Status of Autochthonous Malaria. Rieux.—p. 559.
27 *Conclusions Adopted by Fourth Inter-Allied Surgical Conference.—p. 570.

19. **Primary Suture of War Wounds.**—Gross regards the primary suture of war wounds as the greatest progress in military surgery realized during the war. Until then primary suture was exceptional. "Thanks to Tissier's works," he says, "the primary suture is now prevailing more and more and, in all probability, tomorrow it will be the routine practice. The Inter-Allied Conference endorsed it, and a pleiad of young surgeons are showing me daily the magnificent results obtained with primary suture of wounds." He adds that he has been studying it with the closest attention for more than two years and has been striving to popularize it. The only conditions necessary for constant results are a good surgical and a good bacteriologic technic; being able to keep the wounded long enough for complete healing, that is, about two weeks, or, if they have to be evacuated in four or five days, to pass them into the hands of some other surgeon skilled in carrying out the system. This *liaison chirurgicale* is indispensable if military exigencies compel the patients to be sent farther back from the front. He recapitulates the

whole theory and practice, the main point being that every war wound which does not contain the streptococcus should be sutured. Practically every war wound reaching his hospital is given the primary suture, but the stitches are cut if the bacteriologist's report in a few hours shows the presence of streptococci.

20. **First-Aid Posts.**—Gaujard gives an illustrated description of dugouts and cellars equipped for a first-aid post, such as have proved most efficient. The posts serve also as regimental infirmaries. He has been impressed with the frequency of skin affections, infection developing in erosions, scratches, etc. The frequency of these infections is shown by the lymph glands in the axilla; in examining one company preliminary to vaccination, only twenty-three of the men were found free from this adenitis.

21. **Disintegration of Catgut Ligatures.**—Taylor reports, as the result of considerable research, that a catgut ligature in a wound is liable to become disintegrated, and secondary hemorrhage follow, when the wound contains the *B. aerogenes-capsulatus-welchii*. No other micro-organism seems to attack the catgut, and none of the antiseptics modifies the elasticity or the strength of the catgut, but under the influence of hypochlorite solution, the surgical knot always comes untied. Hence he warns that Carrel's solution is contraindicated for a wound in which an important vessel has been ligated, especially in the presence of the *B. aerogenes-capsulatus*.

22. **Backward Luxation of Elbow.**—Verny found in three cases that an otherwise irreducible backward luxation of the elbow corrected itself spontaneously when the man hooked his elbow over the round of a ladder, the highest he could reach, and bore his weight on it. The relaxation of the triceps is probably responsible for this as the elbow is hooked high up on the ladder standing against the wall, the man leaning against the ladder as he stands sideways at the foot.

24. **Mumps and Myocarditis.**—Pujol has encountered nine cases of myocarditis among 450 men with mumps, but some other cause seemed to have cooperated in six cases. In three cases, however, the mumps seemed to be alone responsible for the myocarditis. The three men recovered, but were unable to resume active service and were given sedentary positions. In two of the cases the heart symptoms attracted attention at the height of the parotitis. One man complained of dull retrosternal pain and a few painful extrasystoles. In all, the heart action was extremely weak. This was not noticed in repose, but the reserve force was very small, and gave out at any slight exertion, with dyspnea, precordial pain and pounding in the chest when the man tried to climb stairs, carry his bed roll, or march. The physical signs are minimal, merely a variable degree of tachycardia, but functional tests readily reveal the depreciation of the organ. It is futile to attempt to return such men to active service; they merely return to the hospitals again after a change of sectors or an *affaire*. Only the milder cases can be returned to their posts with request that they be spared all but light duty. On the other hand, complete dismissal from the army is only exceptionally called for.

25. **Results of Physical Training.**—Brizard gives the average findings from 349 men taking a course of physical training at the *centre d'instruction physique du Gouvernement militaire* at Paris. The average for a man of 37 taking an eight weeks' course is a gain in weight from 64.8 to 65 km.; in the chest measure, from 90 to 93 cm. inspiration, and from 85.5 to 89.1 expiration. The waist measure was reduced from 79.2 to 77.1 and the spirometer showed an increased capacity of from 33 to 36.5.

26. **Autochthonous Malaria.**—Rieux concludes his study of the new foci of malaria that have developed in France, by urging the examination for malarial plasmodia of the colonial troops, of men returning from service in the Orient, and of Italian and other alien laborers employed in the army zone. Isolation and disinfection should be enforced for all carriers. The early diagnosis of new cases of malaria is also imperative, with prompt isolation and disinfection.

27. **Inter-Allied Surgical Conference.**—The brief conclusions are reproduced on the seven war questions discussed: transfusion of blood, trench foot, wounds of rectum and bladder, pseudarthrosis after wounds, conservative operations on the foot, and osteosynthesis in treatment of fractures. The addresses on the seventh question, sterilization of war wounds, are to be given in full in the following number.

Archives de Médecine des Enfants, Paris

July, 1918, **21**, No. 7

28 *Differentiation of Diphtheria Bacillus. E. C. Aviragnet and Le Soudier.—p. 337.
29 *Epidemic of Meat Poisoning. J. Renault and Romme.—p. 351.
30 Congenital Luxation of Right Shoulder. H. L. Rocher.—p. 359.
31 *Abscess at Anus in Children. J. Comby.—p. 365.
32 Hair Balls. J. Comby.—p. 369.

28. **Differentiation of Diphtheria Bacillus.**—Aviragnet and Le Soudier admit that bacteriologic examination is not very useful for treatment in cases of diphtheria, as antitoxin is given in suspicious cases without waiting for bacteriologic confirmation. But in prophylaxis it is supremely important, for convalescents, and for all atypical cases of infectious sore throat when diphtheria is prevailing. When the examinations at several days' interval give negative findings, such cases may be regarded as nondangerous.

29. **Meat Poisoning.**—Fully 220 children developed severe poisoning after eating at the municipal canteen, and it was traced to paratyphoid bacilli in the meat. The bacilli had been killed by the cooking given the meat, so no infection resulted, but the toxins were not modified by the cooking, and severe alimentary disturbances followed, suggesting cholera, and three of the 220 died. Seven of the fourteen attendants at the canteen were also affected.

31. **Abscess at Anus in Children.**—Comby has encountered eight cases of a simple abscess at the anus in infants or young children. Straining at stool, erosions from repeated introduction of the thermometer or other cause, scratching from irritation by the oxyuris, soap suppositories or other occasional cause may induce local suppuration. Evacuation and disinfection of the abscess is all that is necessary to ensure healing. This should be systematically done before assuming a tuberculous or syphilitic origin. He warns that the thermometer or other object introduced into a child's anus should be thoroughly sterilized and cautiously worked in to avoid injuring the tissues.

Archives Mensuelles d'Obstétrique et de Gynécologie, Paris

January-March, 1918, **7**, No. 1-3

33 *Anemia in the Pregnant. E. Petersen (Copenhagen).—p. 1.
34 Pituitary Extract in Obstetrics. M. Cheerson.—p. 22.
35 Colloidal Gold in Puerperal Septicemia. Chauveau.—p. 36.
36 *Welfare Work for Mothers and Children. P. Desfosses.—p. 52.

33. **Anemia in the Pregnant.**—Petersen reviews what has been written on the subject of anemia, resembling pernicious anemia, which develops in pregnant women. It is only during the last half of the pregnancy that this form of anemia develops, and the evidence he presents seems to indicate that the pregnancy in itself is the cause. None of his three cases or of Esch's six or of the others on record had shown any symptoms of anemia at any time before, and nothing except toxic action from the pregnancy could be found to explain it. In a very few cases the anemia subsided after delivery, but in the majority it continued a rapidly progressive course to a fatal termination. The women erroneously ascribe to the fact of the pregnancy any ill feelings noticed. Pallor is the first symptom to attract attention. It grows more pronounced every day, with a yellowish tinge. The mucous membranes are blanched and there is a tendency to severe epistaxis, petechial spots and hemorrhages in the retina. There may be edema of the legs, and fever may mislead the diagnosis. Vomiting and diarrhea are common, and bilirubin in the serum and urobilin in the urine testify to the destruction of red corpuscles. The mortality in the twenty-three cases compiled by Esch was 70 per cent.; in Schevelov's compilation of fifty-two it was 65 per cent.; in Seitz' forty-three it was 50 per cent.; in Deluen's five cases all died. In Petersen's cases, two of the women died. The third recovered after artificial interruption of the pregnancy. He insists that the pregnancy should be arrested if the anemia proves rebellious to medical

measures, of which the most effectual seem to be intramuscular injections of defibrinated human blood.

36. **Protection and Welfare Work for Mothers and Children.**—Desfosses tells what is being done and being planned for the reconstitution of the race in France. He describes in grateful terms the work of the Children's Bureau of the American Red Cross, and gives the French laws bearing on the protection of pregnant and parturient women and on the care of the children.

Bulletin de l'Académie de Médecine, Paris

July 2, 1918, **80**, No. 26

37 *Poisoning from Cyanamid. J. P. Langlois.—p. 6.
38 *Proper Doses of Drugs. C. Fiessinger.—p. 7.
39 *Muscle Autolysates. P. Delbet and Karajonopoulos.—p. 13.
40 *Pyocyaneus Meningitis. J. Abadie and G. Laroche.—p. 15.

37. **Cyanamid Poisoning.**—Workers on calcium cyanamid are liable to dermatitis and burns from the lime and also from the extremely high temperature to which the calcium carbid has to be raised to combine with the nitrogen. Langlois calls attention to the serious danger for such workers if they take an alcoholic drink. His research on animals confirms the clinical observation of the sensitization of the vasodilator centers by the cyanamid, so that a small glass of wine is liable to send the pulse up to 104 and the blood pressure extremely low, with rapid respiration. The man in a typical case described had syncope after drinking 30 centiliters of red wine. The syncope returned whenever he raised his head, and nausea and extreme vasodilation of face and conjunctivae were pronounced. The blood pressure kept very low for an hour, but by the end of the eighteenth hour there were no further signs of disturbance.

38. **Doses of Drugs.**—Fiessinger classes drugs according as they have a specific action on the disease or a mechanical action, like that of a drastic purgative, or a symptomatic or functional action. In this latter group the doses should not be large. Small doses, long kept up, should be the rule for symptomatic drugs. With digitalis, for instance, large doses wear out the heart; on the other hand, all laud its efficacy and harmlessness when given subcontinuously in very small doses. Patients, otherwise apparently doomed, recuperate under this and live for many years a quiet existence, avoiding extreme exertions. Danger begins with doses over 0.1 gm. of pulverized digitalis; 8 or 10 drops of the 1 per thousand solution is the extreme limit. Belladonna likewise is prescribed often in too large doses; with 0.01 gm. of the extract, signs of intolerance are common. Atropin sulphate acts effectually in doses of 0.0001 or 0.0002 gm.

Manquat agreed with Fiessinger that the doses of symptomatic drugs are altogether too large as generally given; 0.5 gm. or less of chloral have as good a sedative effect as 2 gm. He witnessed the death of a man twenty minutes after injection of 1 c.c. of pantopon. Another man of 65 succumbed after taking 0.5 gm. of antipyrin, and a child of 5 died after 0.3 gm. of antipyrin had been given in a suppository. He has also witnessed two serious mishaps after ingestion of 0.5 gm. pyramidon. Robin emphasized that the disturbance in function precedes the organic lesion, and by treating the functional disturbance early, we may hope to ward off or attenuate the organic lesion. This can be attempted with the small symptomatic doses, but different drugs with a similar action should be used in turn so that the organism will not become habituated to any one. Fiessinger asked to have a committee appointed to study the proper dosage of the more commonly used drugs when they are prescribed for their symptomatic action alone.

39. **Destruction of Tissues as Factor in Shock.**—Delbet reports research which confirms the extreme toxicity of crushed muscle tissue even when aseptic. Absorption of this muscle autolysate is undoubtedly a factor in traumatic shock. The practical conclusion is that the crushed tissues should be cleared out as an emergency measure at once, without waiting for the shock to subside.

40. **Pyocyaneus Meningitis.**—In Abadie's case, intraspinal injection of the patient's own serum apparently cured the young man when the spinal fluid and blood serum contained the pyocyaneus in pure culture. The meningitis had followed a skull wound. Three applications of this autoserotherapy were made, injecting 3 c.c. of his serum at intervals of eighteen and five days. The serum agglutinated at 1 per thousand, showing the high antitoxin content.

Journal de Médecine de Bordeaux

July, 1918, **88**, No. 7

41 *Scabies. W. Dubreuilh.—p. 183.
42 *War Suprarenal Insufficiency. J. Carles.—p. 185.
43 *Fracture Centers. A. Charrier and Maurizot.—p. 188.
44 Differentiation of True and False Aneurysms with the Oscillometer. F. Gadaud and G. Jeanneney.—p. 192.
45 *Exercise for Brain-Workers. P. Nadal.—p. 195. Conclusion.
46 Vital Statistics at Bordeaux. Duvezac.—p. 204.

41. **Scabies.**—Dubreuilh remarks that the civilian and military hospitals are encumbered with cases of scabies; even the society women have it, as their husbands bring it to them on their furloughs. He has found the best salve for civilian use a mixture of 200 gm. lard with 20 gm. each of black soap, sulphur precipitate and balsam of Peru with 10 gm. beta naphthol. The whole of this is rubbed vigorously with the hands into the skin, sparing only the face and scalp, which are never affected, and the middle of the back, which is seldom involved. The salve should be rubbed in energetically for fifteen or twenty minutes at night, then sleeping in gloves and socks to keep the salve on the hands and feet. He advises repeating the applications the third and fifth nights, changing the linen the first and last days. The important part of treatment is to rub the salve all over, not merely where the lesions are apparent, beginning with the fingers and toes separately and paying special attention to the genitals, buttocks and breast. Ordinary laundering disinfects the linen. Another important feature of treatment of scabies is that the suspects in the environment must be treated too and at the same time, or reinfection is certain. The cleansing bath should not be taken until morning, when the salve is applied at night.

42. **War Suprarenal Insufficiency.**—Carles has within the last year encountered fifteen cases of what seemed to be Addison's disease, in men on active service, except that it displayed a tendency to spontaneous subsidence, even in the apparently gravest cases. A few weeks of rest and quiet, abstention from meat, and treatment with suprarenal extract soon banished all the symptoms. In two of the cases there was what Loeper has described as suprarenal dyspepsia, notably improved by epinephrin. The symptoms developed in all after a period of exhausting fatigue, an infectious disease, or gassing. The asthenia was the most striking symptom, more mental than physical. For months the men were incapable of reading a paper, writing a letter or even answering questions that required any thought. Improvement in this respect was rapid under epinephrin treatment. The blood pressure was low, but this is common among all the men at the front. A certain tendency to bronzing of the skin was perceptible in all the fifteen cases. The suprarenal glands after recovery are left below par, and resumption of active service is extremely likely to rearouse the old trouble, and the next time it might prove grave beyond recuperation.

43. **The Fracture Center.**—Charrier expatiates on the great progress that has been realized by collecting the fractured femur cases, for instance, in a hospital especially equipped for fractures. One of his illustrations show a long ward with the interminable series of frames and hammock suspension for each fractured limb.

45. **Exercise for Brain Workers.**—Nadal reviews the exercises which a busy brain worker would find convenient and useful. "Thinking," he reiterates, "is a product of the sensations which reach the consciousness from all parts and promote or check the mysterious fermentations of the subconscious. Thought is actually a secretion of the body as a whole." The brain worker is too apt to forget that the product of his brain, in the ultimate analysis, is the result of the functioning of his physical body. Nadal suggests a number of simple indoor exercises, convenient for the sedentary worker. He denounces bicycling as the poorest form of outdoor exercise, as only the legs work.

Lyon Médical

June, 1918, 127, No. 6

47 *Trauma and Tuberculosis. Péhu and Daguet.—p. 241.
48 *Intoxication with Illuminating Gas. R. Pauly.—p. 247.
49 *Embedding in Paraffin. C. Dunet.—p. 256.
50 Kidney Anomalies; Three Cases. De Teyssier.—p. 260.

47. **Traumatism and Tuberculosis.**—Péhu and Daguet report five cases in which pulmonary tuberculosis developed after a war wound of the chest. These were the only ones in which tuberculosis has developed in a total of 146 cases of war wounds of lungs or pleura or both. Even in these five, the tuberculous process developed on the same side only in two. To accept a direct connection between the war wound and pulmonary tuberculosis, tubercle bacilli must be evident in the sputum, the tuberculous lesion must be on the same side as the wound—a scar may be merely evidence of some superficial incision on the other side—and the interval between the wound and the pulmonary disease must not be too long.

48. **Poisoning by Illuminating Gas.**—Two women found in the same room with a gas jet open presented absolute coma for thirty-six hours, with trismus during all this period, and a temperature of 39.6 C. in the woman of 33 and 40 C. in the girl of 17. The temperature gradually subsided to normal in the course of six days. The gas seems to poison the central nervous system with a more lasting toxic action than it has on the blood. Both the women recovered after a week of weakness of the legs; there was no albuminuria or glycosuria. Treatment consisted in injections of caffein and camphorated oil, with an abundant venesection followed by subcutaneous saline infusion. During the first day arrangements were made also for almost continuous inhalation of oxygen.

49. **Improved Technic for Embedding in Paraffin.**—Dunet accomplishes the same purpose as the usual water and alcohol technic by placing the specimen—dried between blotting paper and not rinsed—directly in the mixture consisting of 10 parts of pyridin, 40 parts chloroform and 50 parts acetone. These ingredients are mixed cold beforehand; the amount used is about twenty times the volume of the specimen. The latter is suspended by a thread in the mixture in a test tube or other vial, and is left in the fluid for from ten minutes to an hour according to size. The fluid is then poured off and fresh used for a second bath for the same length of time. The specimen is then transferred directly into the paraffin. Specimens treated by this rapid method take stains as usual, and the specimens keep perfectly.

Paris Médical

June 8, 1918, 8, No. 23

51 *Auscultation in Sphygmomanometry. Tixier.—p. 449.
52 Technic for Bacteriologic Examination of a Chancre. L. Tribondeau.—p. 454.
53 *Distomatosis of the Liver. De V. de Lavergne.—p. 459.
54 *Factitious Diplopia. F. Terrien.—p. 462.

51. **Auscultation in Estimation of the Pulse.**—Tixier extols the facility, constancy and accuracy of the findings with auscultation in sphygmomanometry. He quotes Gallavardin's saying that sphygmomanometry is to chronic disease what the thermometer is to acute disease. Any old sphygmomanometer can be arranged for auscultation by adding the pneumatic cuff, the bulb, phonendoscope and biauricular stethoscope.

53. **Distomiasis in Man.**—Lavergne has encountered the eggs of the distoma in stools from two soldiers within the last year, and is convinced that they would be found oftener if systematically sought. The parasite is widely prevalent in cattle in France, especially in sheep. The parasite and its intermediate host abound in marshes, and man can acquire it not only in drinking the water but in dirt getting on his hands before eating.

54. **Factitious Diplopia.**—Terrien says that men who have had diplopia sometimes complain of it after it has ceased, hoping to get longer sick leave. This can be detected by having the man look at the light of a candle in a darkened room, while a light blue glass is placed in front of one eye, and then an opaque glass is substituted for the transparent glass. If he says the diplopia still continues, his simulation is revealed.

Presse Médicale, Paris

July 4, 1918, 26, No. 37

55 *Resistance of the Meningococcus to Antiserum. M. Bloch and P. Hébert.—p. 337.
56 General Anesthesia in War Surgery. P. Picard.—p. 340.

July 11, 1918, 26, No. 39

57 Bacteriologic Diagnosis of Dysentery. A. Ascoli.—p. 357.
58 *Bleeding Bronchitis. H. Violle.—p. 359.
59 Treatment of Chancrellous Bubo by Injection of Iodoformed Petrolatum. W. Dubreuilh and E. Mallein.—p. 361.

55. **Resistance of Meningococcus to Antiserum Treatment.**—Bloch and Hébert ascribe the fatal outcome in certain cases of meningitis, notwithstanding early and intensive serotherapy, to invasion of the blood by the meningococcus. The meningococci may become ensconced in the perivascular sheaths inside the pia or nearby. Parameningeal foci of this kind, in contact with the ventricular-subarachnoid fluid without opening directly into it, would explain the cases rebellious to intraspinal injection of the antiserum. These reservoirs of infection are outside of the meninges, and are not reached by the intraspinal injection. From these foci the meningococci can invade the blood—inducing septicemia—or they can start the meningitis anew. In order to act on these foci, the antiserum has to be injected into the general circulation as well as into the subarachnoid space. Another reason for the injection into the general circulation is that the meninges will not stand too frequent intraspinal injections. Anaphylaxis need not be feared if the antiserum is injected simultaneously into the spinal cavity and into the general circulation. A very severe case is described in which the man of 30 had meningococcus B meningitis and septicemia with double iridocyclitis. Under early and vigorous serotherapy by both routes, complete recovery followed. The antiserum can be given by the vein or intramuscular or subcutaneous, but the intramuscular route seems preferable.

58. **Bleeding Bronchitis.**—A somewhat similar article by Violle was summarized in these columns, Aug. 17, 1918, p. 605.

Revue Médicale de la Suisse Romande, Geneva

June, 1918, 38, No. 6

60 *Placenta Praevia and Eclampsia. G. Rossier.—p. 353.
61 Diaphragmatic Hernia. C. M. du Pan.—p. 363; Montandon.—p. 373.
62 Suprarenal Insufficiency. N. Betchov, and V. Demole.—p. 379.
63 *Expulsion of Esophagus Mucosa. A. Sauvin-Thury.—p. 386.

60. **Placenta Praevia.**—In case of placenta praevia, Rossier tampons the vagina only when the cervix is not dilated enough to admit two fingers, and only when, through a boiled speculum, he can pack in sterilized iodoform gauze from a Dührssen box. Tamponing done in this way is free from objections. If the cervix allows the passage of two fingers, tamponing is contraindicated, and the woman should be prepared for an eventual abdominal operation. The Braxton-Hicks version condemns the child in advance, as a rule, and hence with a viable fetus it should be reserved for cases in which cesarean section is impracticable.

60. **Eclampsia.**—Rossier insists that in case of eclampsia the woman should be delivered as promptly as possible, and declares that cesarean section realizes this better than anything else. In a case described, the convulsion lasted for thirteen minutes and was followed by twenty minutes of coma. The blood pressure was 180, but dropped to 150 after venesection, and there was .32 per thousand albumin in the urine. The condition improved but by the fourth day the blood pressure had run up to 195, and there was 7 per thousand albumin in the scanty urine. The next day the blood pressure was 210, and the cervix was permeable only for one finger. Confident that the child would die if there were another convulsion, he delivered it by a classic cesarean section, and both mother and child did well thereafter, the blood pressure rapidly falling and no further convulsions developing. This technic applied in nineteen cases has given a mortality of 21.1 per cent. This is less than with any other treatment that has been applied in his service.

63. **Expulsion of Lining of Esophagus.**—Thury gives an illustration of the lining of the esophagus as it was expelled

entire by a multipara of 48. She had always been in good health, and nothing pathologic could be found in it except the fact of its expulsion as a tube 34 cm. long, with an additional segment 4 cm. long. While eating breakfast she felt a sudden pain as if she had swallowed an overlarge chunk of bread. The pain was so severe that a physician was called in to give a dose of morphin. By the fourth hour the pain was terrible, and she began to vomit blood and seemed to be suffocating. An hour later her neck became enlarged, and she expelled a membrane from her mouth, her husband drawing it out, believing that it was a tapeworm. She vomited from time to time brownish blood, about a liter in all. There was no history of swallowing a caustic or taking medicine, and the mucosa showed no signs of inflammation. Swallowing afterward was extremely painful and almost impossible. Treatment was restricted to a few swallows of diluted hydrogen dioxid and sterilized oil, with nutrient enemas. By the end of a week she was able to take fluid food by the mouth, and in two months seemed to be quite restored except occasionally a slight difficulty in swallowing. The only explanation that seems plausible is the assumption of a spontaneous submucosa rupture of a varicose vein in the esophagus. Such a hemorrhage might have detached the mucosa and led to its expulsion.

Correspondenz-Blatt für Schweizer Aerzte, Basel

June 29, 1918, 48, No. 26

64 *Food Problems. W. Silberschmidt.—p. 849.
65 Wartime Diets. A. Gigon.—p. 857.
66 Transfusion of Blood. C. A. Pettavel.—p. 862. To be continued.
67 Triple Staining Culture Medium for Differentiation of Typhoid and Dysentery. R. Massini.—p. 887.

64. **Food Problems.**—Silberschmidt remarks that in Switzerland 50 per cent. of the albumin, 70 per cent. of the fat and 20 per cent. of the carbohydrates consumed are derived from domestic milk and its products. All the sugar is imported, and 60 per cent. of the carbohydrates. He urges breeding of fish in the lakes. The wartime diet seems to have increased the number of urinary disturbances, especially in the elderly. He adds that in Germany a loss of from 200 to 350 gm. per day has been repeatedly observed of late. Last year an average loss of 10 per cent. in the weight of adults was recorded. The increase in insanity may possibly be due in part to this cause, as also the cases suggesting exophthalmic goiter which have been reported in Germany. The well known fact that ill fed persons are more prone than others to intestinal disturbance has been confirmed anew. In various cities there have been epidemics of enteritis and dysentery, but the specific dysentery bacilli could not be discovered. Perhaps in the undernourished otherwise harmless bacteria may induce infections. The young seem to stand the war diet better than those beyond 40 or 45; the power of adaptability in general declines with age.

He urges physicians to educate people to the advantages of the fireless cooker as ensuring more thorough and more savory cooking while saving fuel. Every housewife should be an excellent cook and it is now more important than ever that girls should be trained in cooking. The introduction of municipal kitchens has not proved a success everywhere. In Zurich, however, the school soup houses have been enlarged and are working well. The poorer scholars get the soup free, and any one can buy a quart of a good nourishing soup for a few pennies, and take it home. This keeps the family together at meals, and vegetables and fruit, perhaps from their own garden, give variety. He warns physicians further not to be misled to recommend substitute foods without thorough knowledge of them.

Policlinico, Rome

July 14, 1918, 25, No. 28

68 *Bridge Flaps. I. Scalone.—p. 653.
69 Neurologic Centers. G. C. Riquier.—p. 656.
70 *Anglo-Saxon Medical Journalism. L. Verney.—p. 659.

68. **Bridge Flaps for Large Defects.**—Scalone reports success in promoting the healing of large wound areas by loosening up the skin around and cutting a long strip which is twisted around to bridge the defect, the free end sutured to the other side of the area. Sometimes a second flap is cut to suture to the first, thus leaving only three small triangles of the area uncovered. It is better not to scrape away the granulations; the flap is applied directly over them, after rinsing off any purulent secretion. He cuts the flap with the adipose tissue so that it will be thick enough. The free end is sutured to a space cut for it into sound tissue. Several flaps can be used, thus nearly covering the area with the pedunculated flaps bridging it in different directions. The sound skin can be stretched to bring it over the defect where the flap was cut. In one case of a large gap on the back of the hand, he bridged it with a flap of skin from the abdominal wall, but usually he takes the best nourished strip of skin available close by and cuts it with a broad base.

70. **Anglo-Saxon Medical Literature.**—The first instalment of Verney's article was summarized in these columns, August 17, p. 608. He here describes in detail different medical periodicals in England and America and in the British colonies, saying, "The *Journal A. M. A.*, the most widely read medical journal in the world, has a weekly issue of nearly 70,000; the *British Medical Journal* of at least 22,000, and the *Lancet* nearly as much. We will not be telling any secret when we say that the most widely distributed Italian medical journal, the *Policlinico*, has only about 10,000 subscribers." He remarks that the "most pronounced characteristic of the Anglo-Saxon medical journals is their practical tendency. The aim is to render immediately utilizable the results of scientific research. The articles are written in a simple, direct style which renders them easy to read even for those who know only the rudiments of English." He continued "Of course it happens in the Anglo-Saxon medical journals, as well as in the Italian, that the same names are found repeated in many journals. There are certain authors who write year after year, under many headings and in diverse forms or with few variations the same observations and the same lucubrations in journal after journal; they are victims of graphomania, and scatter their writings a little everywhere."

Verney concludes with the remark that the powerful development of the Anglo-Saxon medical literature arouses admiration, and that the development will probably continue in the near future on a still larger scale. "In Italy, since we have discovered Anglo-Saxon medical literature, we are watching its progress with growing sympathy. This is evident from the increasing amount of space given in the Italian journals to extracts from the English and American medical press. The medical press in Italy bears honorable comparison with it, although in many respects it has reached a stage of progress beyond the Italian. The Italians appreciate above all the practical value of the articles published; the complete and vast abstract system; the importance assigned to social medicine; the campaign against nostrums, and the editorial supervision over the advertising pages. With extreme satisfaction and without a shade of rivalry we hail these valuable features, deriving from them a wholesome and stimulating incentive to emulation."

Riforma Medica, Naples

July 6, 1918, 34, No. 27

71 Three-Day Fever. U. Gabbi.—p. 522.
72 Vaccine Therapy in Typhoid. M. Pennetta and G. Melosci.—p. 524.
73 *Senile Cataract. N. Scalinci.—p. 529.
74 The Danger of Tuberculosis in Factories. E. Tedeschi.—p. 531.

73. **Senile Cataract.**—Scalinci discusses whether it is better to attempt the extraction of an unripe senile cataract in the capsule or to attempt to ripen it artificially, when the disturbance in vision is prolonged and of a high grade. He describes a case to illustrate the fine effect realized by multiple puncture of the equatorial portion of the lens, repeated a week later. The cataract was ready for extraction a month afterward, and by the end of another month the woman of 61 was able to read the No. 2 type in De Wecker's book. The cataract had been years in developing and had not made any progress during the ten months following a preparatory iridectomy. He has always been able to follow

the puncture procedure with the extraction of the cataract in from eight days to five weeks. This artificial ripening of the cataract is called for mainly in the dyscrasic type of senile cataract.

Rivista di Clinica Pediatrica, Florence

June, 1918, **16**, No. 6

75 *Incomplete Form of Pituitary Deficiency. M. Pincherle.—p. 281. To be continued.
76 *The Fifth Cusp. G. Guidi.—p. 299.

75. **Pituitary Deficiency.**—In this instalment of his study of the masked hypophysis syndrome, Pincherle describes four cases of diabetes insipidus in boys of from 7½ to 16 years old. The physical development was backward in all, but satisfactory progress was evident under systematic treatment with pituitary extract, continued for months.

76. **The Fifth Cusp.**—Guidi refers to the anomaly described by Sabouraud as a sign of inherited syphilis. He found the fifth cusp in nineteen of 150 children examined but nothing was found to suggest a syphilitic taint in any instance.

Archivos Españoles de Pediatria, Madrid

May, 1918, **2**, No. 7

77. *Inversion of Bladder in Infants. E. N. Coronas.—p. 257.
78 Astasia-Abasia-Phobia in Child under Three. J. C. M. Fournier. —p. 265.
79 *Chloroma. A. Catalina.—p. 277.
80 Influenza in Children. C. S. de los Terreros.—p. 314.

77. **Inversion of Bladder in Infants.**—Coronas gives an illustrated description of complete inversion of the bladder through the urethra in two female infants of 13 and 18 months. Both were breast fed, but fed very irregularly and were given inappropriate food in addition from the very first. Each had a history of gastro-intestinal derangement and enteritis, with other signs of physical inferiority and tendency to rachitis. One had been given four spoonfuls of castor oil, fractioned, in twenty minutes, and this had been followed by prolapse of the rectum which had kept up for two weeks, when the inverted bladder appeared in the vulva. It protruded so extensively that the mouths of both ureters were exposed. In two similar cases on record in infants, whooping cough was evidently a factor in one and enterocolitis in the other. The inverted bladder was easily restored to place in one of his cases, but it fell out again as soon as it was no longer supported, demonstrating the futility of all measures except a radical operation. In the other case the tumor was hard to reduce, even under chloroform, but once reduced, there was no further trouble from it. The operation consisted in abdominal cystopexy, on the same principle as abdominal fixation of the uterus, using silk. In both cases there was incontinence of urine for a long time but finally the sphincter regained its function.

79. **Chloroma in Boy of Five.**—Catalina's patient presented left exophthalmos and several bunches in the skull and abdomen. One of the bunches in the skull had suppurated; the pus issuing from it was green. The spleen was much enlarged and the blood with 4,000,000 reds and 14,400 whites showed 30 polynuclear neutrophils, 25 large mononuclears and 21 eosinophils per 100 leukocytes. Benzol and the roentgen rays merely reduce the number of leukocytes, and this alone does no good in such cases. Small doses of arsenic and heliotherapy seem the only promising measures.

Prensa Medica Argentina, Buenos Aires

May 30, 1918, **4**, No. 36

81 *Kinetic Surgery. G. B. Arana.—p. 535.
82 Banti's Disease with Syphilitic Origin. L. L. Resio.—p. 539.

81. **Kinetic Amputations.**—Arana has now an experience with thirteen cases in which he applied in amputation the principle of kineplastics, for vitalization of the artificial limb. He reviews Vanghetti's suggestions in this line to utilize muscles, tendons, nerves, vessels and skin to make the most of the motor function left in them. Of course the muscle has to be perseveringly trained to its new task. The simplest form is the loop formed by the muscles and tendons below the stump of the bone, the opening in the loop being lined with skin. The motor force in the muscle loop imparts motion to the prosthesis or to a tool held in the loop. Another application of the principle is what is called the key, the muscles of the stump being formed in the outline of a hook, allowing a space in which a tool or other object can be held. Arana's illustrations show these various types, including one in which the muscles are formed into two of these hooks. The loops can be made on the side of the stump. Theoretically any number of key hooks or loops are possible, but in practice two seem to be the limit. Union of the antagonist muscles gives a better hold.

Revista de Medicina y Cirugia Practicas, Madrid

June 21, 1918, **121**, No. 1511

83 Sheet Lead Effectual Treatment of Varicose Ulcers. A. Ledo.—p. 321.

Revista de Medicina y Cirugia, Havana

May 25, 1918, **23**, No. 10

84 Electric Fulguration Treatment of Prostatism. D. Geiringer and J. Campuzano.—p. 263.
85 Small Epidemic of Rubeola. V. P. Castello.—p. 268.

Revista Sud-Americana de Endocrinologia, etc., Buenos Aires

April, 1918, **1**, No. 4

86 Case of Anaphylaxis from Injection of Lecithin. S. Dessy.—p. 95.

Semana Medica, Buenos Aires

May 9, 1918, **25**, No. 19

87 Case of Porokeratosis with Black Pigment and Atrophy. N. V. Greco.—p. 527.
88 Differential Reactions of Stovain. J. A. Sanchez.—p. 532.
89 *Thready Pulse Sign of Perforation in Typhoid. G. Giacobini.—p. 535.
90 *Prophylaxis of Tuberculosis. E. R. Coni.—p. 536.
91 Physiologic Rôle of Sulphur. E. Fynn.—p. 539.

89. **Filiform Pulse in Typhoid.**—Giacobini has noticed that when the temperature drops in typhoid fever, the pulse becomes at the same time characteristically filiform when the hypothermia is the consequence of perforation of the bowel. With hemorrhage, the temperature may drop likewise but the pulse does not become thready in the same way. This filiform pulse with sudden hypothermia calls for immediate operation, even when there are no pains or other symptoms suggesting peritonitis, no tympanism, vomiting or special tenderness. The filiform pulse, he declares, points unerringly to a perforation as he has established in a large number of cases.

90. **Prophylaxis of Tuberculosis.**—Coni relates that as early as 1893, Argentina took the lead in sending children to a seashore sanatorium as a means of warding off or curing tuberculosis.

Siglo Medico, Madrid

June 15, 1918, **65**, No. 3366

92 Bladder Calculi. A. P. Martin.—p. 463.
93 Demography of Prevailing Epidemic. L. Lasbennes.—p. 466.

Nederlandsch Tijdschrift voor Geneeskunde, Amsterdam

June 1, 1918, **1**, No. 22

94 Centennial of F. C. Donders. G. van Rijnberk.—p. 1493.
95 Scalp Disease from Microsporon Lanuginosum. D. Muijs.—p. 1497.
96 *Necrotic Scarlatinal Lymphadenitis. A. Welcker.—p. 1509.
97 Menstruation Eosinophilia. D. Klinkert.—p. 1517.
98 *Abnormally Short Umbilical Cord. F. M. G. de Feyfer.—p. 1522.

June 8, 1918, **1**, No. 23

99 *The Weight Curve in the Tuberculous. P. J. L. de Bloeme.—p. 1558.
100 *Acute Myeloblast Leukemia. L. S. Hannema.—p. 1567.
101 *Morphin and the Parasympathetic System. E. C. van Leersum.—p. 1575.
102 Urticaria from Muscular Exertion. N. A. van de Roemer.—p. 1579.

96. **Necrotic Scarlatinal Lymphadenitis.**—Welcker remarks that every epidemic of scarlet fever has its special features; and in a recent epidemic he encountered eight cases of destructive processes in the lymph glands of the axilla or neck. Only one of the eight children recovered; they were all under 5 and the disease was of a specially severe type from the first. The destructive adenitis developed a few days after the eruption; the infiltration spread through the adjoining tissues, with the hard swollen gland in the center. The

process in the neck extended down to the esophagus and trachea, involving all the soft tissues, the dry necrosis destroying muscles, vessels and skin indiscriminately. In the one case of recovery, the process lasted for months before all the devitalized tissues had been cast off. Several cases are recorded in the literature in which erosion of a vessel had entailed fatal hemorrhage, or erosion in the pharynx allowed the escape of food. Aneurysms have also been described as a sequel, as also the spread of the necrotic process to the pleura, lung or pericardium.

Most writers say that, as a rule, the process comes to suppuration which can be cleared out and the whole arrested. But Welcker's experience has not been so favorable. In all his eight cases the clinical picture resembled that of bubonic plague. Cutting into the infiltrated region disclosed merely a patch of mummified tissue. The incision in the one case coming to recovery may have contributed to this outcome, but more probably it was a milder form of secondary infection, manifested further in suppurating arthritis in the elbows and the shoulder on the other side.

98. **Overshort Umbilical Cord.**—De Feyfer reports two cases in which delivery was hampered by the shortness of the umbilical cord. Considerable force had to be used to extract the child, tearing the cord in one case; it measured 22 cm. Along with the labor pains, the women had complained of spontaneous pains in the abdomen during the parturition.

99. **The Weight Curve in the Tuberculous.**—De Bloeme gives the annual weight curve in the inmates of two sanatoriums for lung disease in adults and children. He compares his findings with similar figures published by sanatorium physicians in America and elsewhere. He found that in both adults and children the gain in weight was nearly or over twice as much between May and October as in the rest of the year. This tendency to greater gain in weight during this part of the year should be borne in mind in estimating the effect of dietaries.

100. **Acute Myeloblast Leukemia.**—Hannema reports the clinical and necropsy findings in a factory worker of 39 who had been exceptionally healthy until July, 1917, when ulcerative febrile stomatitis developed, with anemia. He entered the hospital the third month. The reds then were over 2 million, the whites 10,000, but in five days the whites ran up to 30,000 and the blood picture was that of aplastic anemia, myeloblasts, myelocytes and promyelocytes forming 70 per cent. of the leukocytes. He died at the end of the third month, with nothing to suggest pathologic hemolysis at any time, and no swelling of lymph glands. Ziegler has reported a similar case with 18,200 whites two weeks after the onset of a pericarditis. Then suddenly the whites ran up to 240,000, with 65 per cent. myeloblasts and myelocytes, and the necropsy findings showed the same leukemia picture as in Hannema's case.

101. **Action of Morphin on the Vagus.**—Van Leersum's charts demonstrate that, besides its action as a narcotic, morphin has a decided direct action on the center for tonus of the parasympathetic system.

Hospitalstidende, Copenhagen

June 19, 1918, **61**, No. 25

103 *Etiology of Orthostatic Albuminuria. C. Sonne.—p. 817.
104 Disappointing Results from Parenteral Injections of Milk in Treatment of Eye Diseases. K. K. Lundsgaard.—p. 826.
105 *Diastase Content of Blood and Urine. E. Winslow.—p. 832.

103. **Orthostatic Albuminuria Occurs Only in Left Kidney.**—Sonne agrees with Jehle that the lordosis in the erect position is the cause of the orthostatic albuminuria, as a rule. But he explains that the lordosis affects the circulation only in the vein from the left kidney. This vein is longer and lies higher than the right renal vein, and it passes across the spine just behind the taut aorta. The lordosis forces it against the aorta, as he shows in detail. This compression readily explains the circulatory disturbance in the connected kidney, with its resulting albuminuria. If this assumption be correct, then orthostatic albuminuria can occur only in the left kidney, and his catheterization of the ureters in ten patients with orthostatic albuminuria showed that the albuminuria was exclusively on the left side in all. In six other patients the albuminuria was a sequel of acute nephritis, and in all these cases, of course, the albuminuria was bilateral.

105. **Importance for Diagnosis and Prognosis of Diastase in Blood and Urine.**—Winslow emphasizes that with acute disease of the pancreas, determination of the diastase is a simple and reliable method for the diagnosis, if complicating diabetes and nephritis can be excluded. With chronic disease of the pancreas, the diastase content is an index of the development of the process. It also throws light on the prognosis with diabetes, to a certain extent. With kidney disease, determination of the diastase is a reliable and very instructive diagnostic measure. Other methods of investigating pancreas functioning—such as Sahli's glutoid reaction, Schmidt's nucleus test, and the olive oil meal have not stood the test of time, or else, like the duodenal tube, they are too disagreeable for common use. But the diastase can be determined rapidly and reliably, without annoying the patient. He reviews the literature on the subject and describes the technic, reiterating that all glycogen-containing organs produce diastase. The diastase is estimated by the quantity of a 1 per thousand solution of starch which 1 c.c. of the blood or urine being examined will digest in thirty minutes at a temperature of 38 C.

He uses a set of ten or twelve test tubes and in all after the first one he puts 1 c.c. of a 1 per cent. solution of sodium chlorid. In the empty glass No. 1, and in No. 2 is placed 1 c.c. of the fluid to be tested. The contents of glass 2 are well mixed, and 1 c.c. is then transferred from this to glass 3, and so on, the glasses thus containing in turn 1 c.c.; 0.5; 0.25; 0.125, and so on, of the fluid under investigation. Then into each glass in turn is dropped 2 c.c. of the 1 per thousand solution of starch. After the set of tubes has been kept on the water bath at 37 C. for half an hour, a few drops of an iodin solution are added to each glass, and the last glass that does not show a permanent blue tint is the index. For example, if this is glass 3, then 0.25 c.c. digests 2 c.c. of the 1 per thousand solution of starch in thirty minutes; 1 c.c. would digest 4 times as much, and thus we say that the diastase figure is 8. Or, to express it in a formula,

$$\frac{\text{d}}{\text{30 minutes}} = 8.$$

In normal conditions the diastase content of the blood serum is from 8 to 16. In pathologic conditions it ranges from 128 to 1,024 or more. In the urine, the normal range is from 16 to 32. In his six cases of amyloid degeneration of the kidney, Winslow found constantly normal diastase figures. Specimens can be kept on ice for a week or at room temperature for several days without modifying the diastase content; a film of toluol will protect against putrefaction while it does not affect the diastase action. In the one case in which the blood serum showed a jaundice tint, the diastase content was normal. With disease in the pancreas from obstruction of its outlet, there is retention of diastase; when approximately normal conditions are restored, the excess of diastase is thrown off through the kidneys.

Ugeskrift for Læger, Copenhagen

June 20, 1918, **80**, No. 25

106 Quinin as Substitute for Pituitary Extract in Obstetrics. A. G. Lauritzen.—p. 979.

June 27, 1918, **80**, No. 26

107 Calcium in Therapeutics. J. Buchholtz.—p. 1005.
108 Eczema from Contact with Fertilizer. P. Trautner.—p. 1016; A. Larsen.—p. 1017; O. Olsen.—p. 1018.
109 *Poisoning with Mineral Oils. Bjerrum and Chrom.—p. 1023.

109. **Poisoning with Mineral Oil.**—Bjerrum remarks that liquid paraffin and petrolatum are not poisonous, but that "petroleum" (probably he means kerosene) is very toxic for children. In a recent case, a child 15 months old died in a few hours after drinking a small amount of petroleum, presumably 4 or 5 gm. There had been violent vomiting immediately but the child died with symptoms of heart failure. Chrom comments on this case that Straume advises against the use internally of liquid paraffin and petrolatum as in his experiments on cats these practically always induced diarrhea and loss of appetite, together with somnolency. He found the lethal dose of petrolatum for a cat was from 72 to 86 gm. per kg. of body weight; the lethal dose of liquid paraffin was from 27 to 107 gm. Stubenrath, on the other hand, reported that he found them harmless when of American make. In any event, Chrom protests against the use of mineral oils in any form in the preparation of food.